# The PHOTOFACT Servicer

SET 464 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ NOV., 1959

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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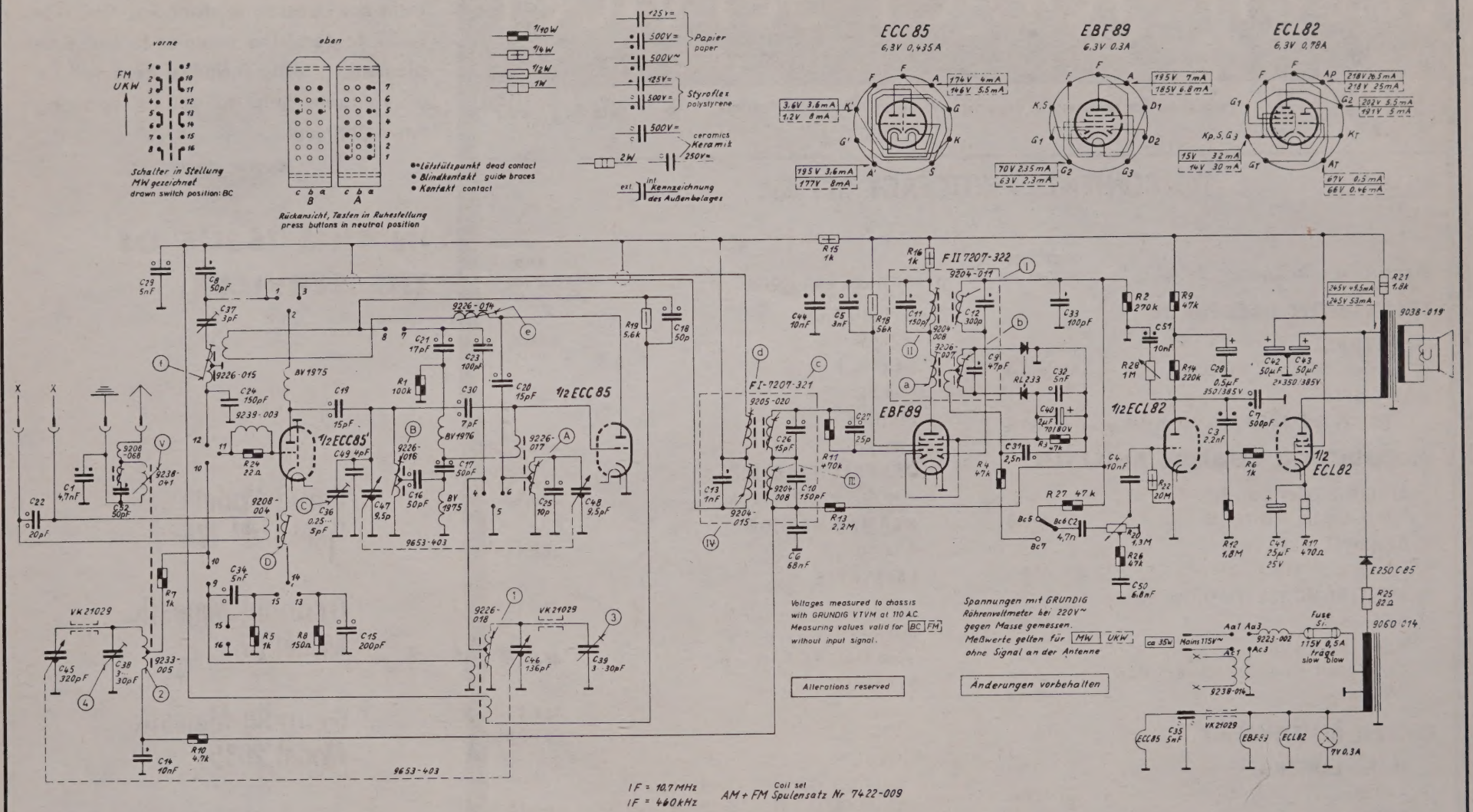
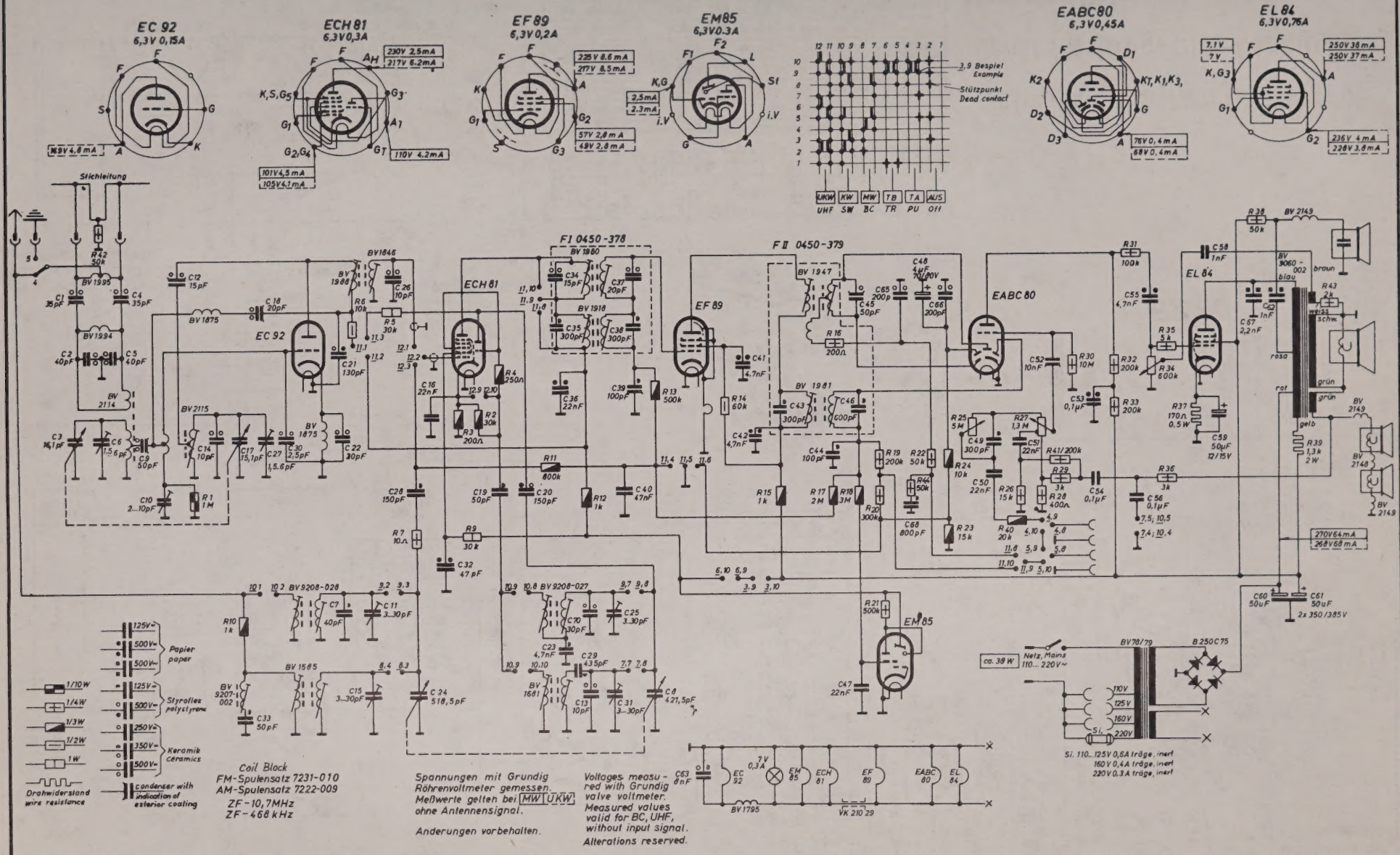
Grundig Majestic Model 2035



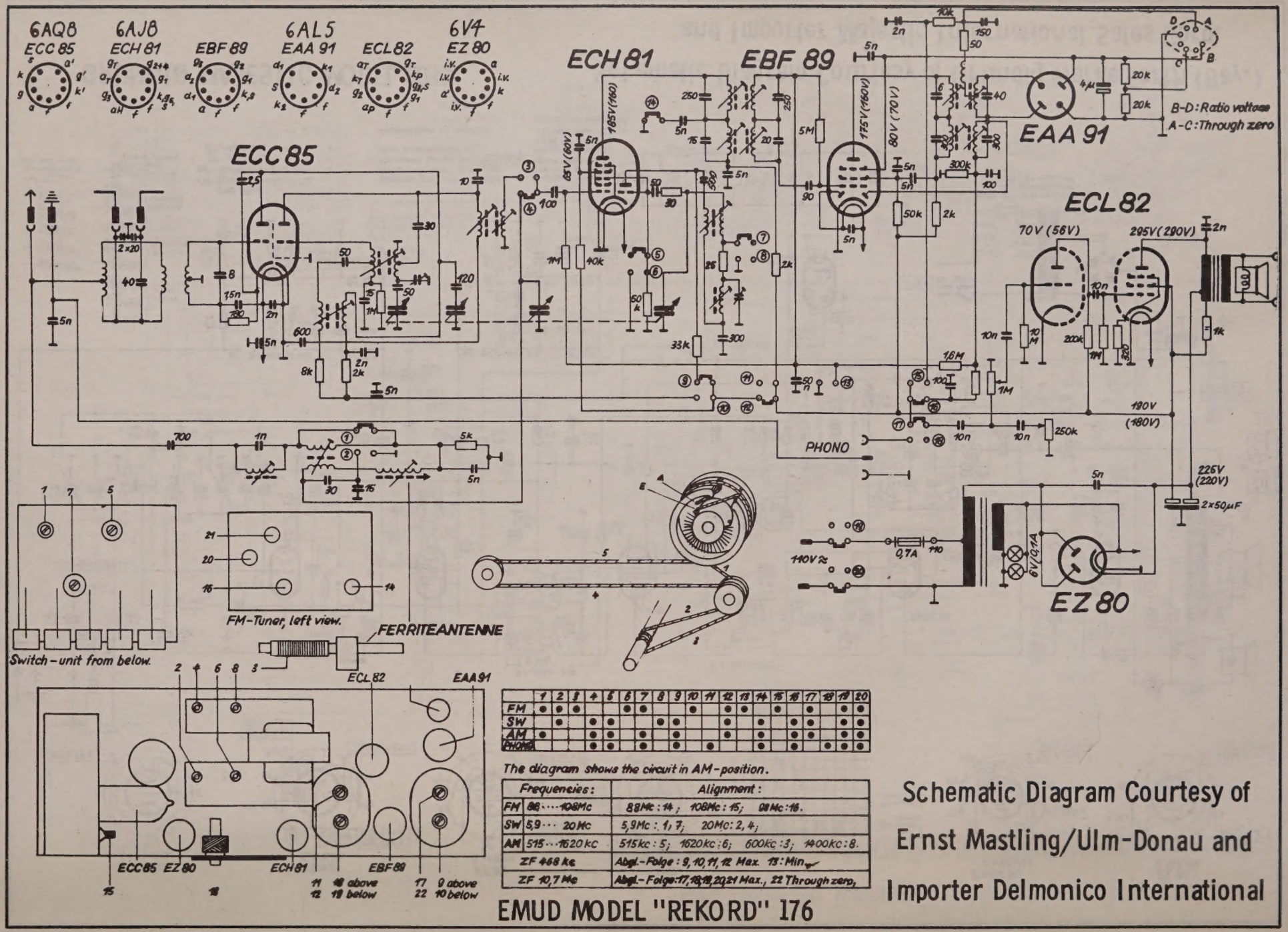

# GRUNDIG MAJESTIC MODEL 87

Schematic Diagram Courtesy of Grundig Werke Forth (Bay.)
and Importer Majestic International Sales Corp.




# GRUNDIG MAJESTIC MODEL 2035

Schematic Diagram Courtesy of Grundig Werke Forth (Bay.)
and Importer Majestic International Sales Corp.




| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FM | ● | ● | ● | | | ● | ● | | | ● | | ● | ● | | | ● | | | ● | ● |
| SW | | ● | | ● | ● | | | ● | ● | | | ● | | ● | | ● | ● | | ● | ● |
| AM | ● | | | ● | ● | | | ● | ● | | | ● | | ● | | ● | ● | | ● | ● |
| PHONO | | | | ● | ● | | | ● | | ● | | | | ● | | ● | | ● | ● | ● |

| Frequencies: | | Alignment: |
|---|---|---|
| FM | 88 ··· 108 Mc | 88 Mc: 14; 108 Mc: 15; 98 Mc: 16. |
| SW | 5,9 ··· 20 Mc | 5,9 Mc: 1; 7; 20 Mc: 2, 4; |
| AM | 515 ··· 1620 kc | 515 kc: 5; 1620 kc: 6; 600 kc: 3; 1400 kc: 8. |
| ZF 468 kc | | Abgl.-Folge: 9, 10, 11, 12 Max. 13: Min. |
| ZF 10,7 Mc | | Abgl.-Folge: 17, 18, 19, 20, 21 Max., 22 Through zero, |

Schematic Diagram Courtesy of
Ernst Mastling/Ulm-Donau and
Importer Delmonico International

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

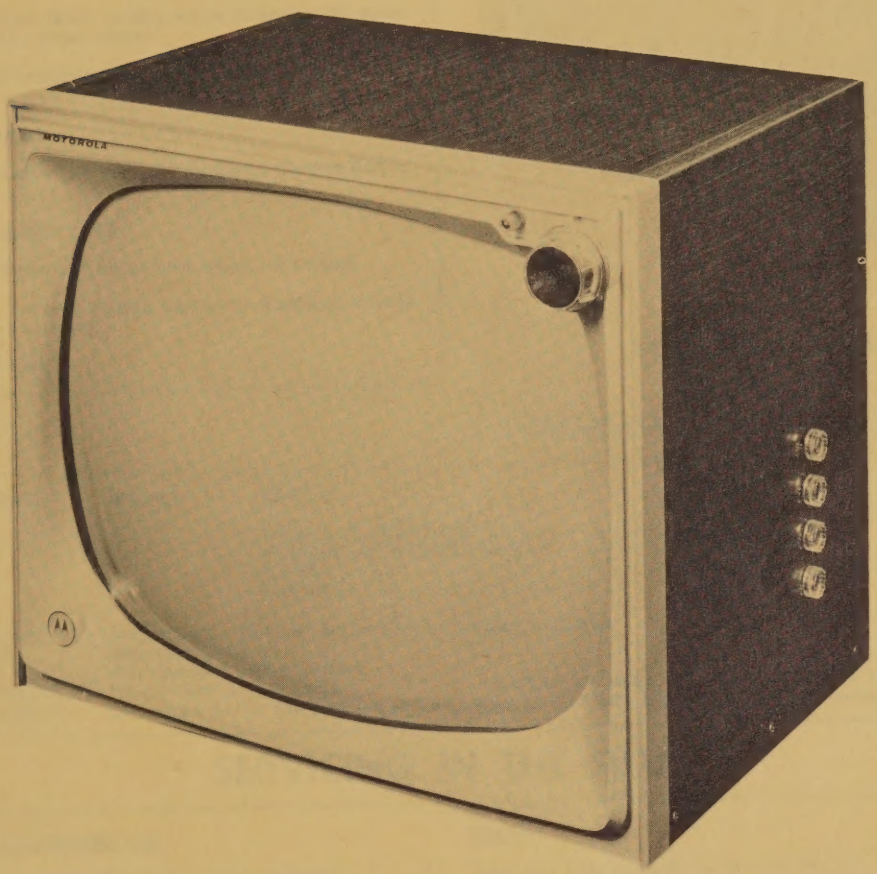
**MOTOROLA CHASSIS**
**TS-556, Y, VTS-556, Y**

## IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

MOTOROLA CHASSIS
TS-556, Y, VTS-556, Y




MOTOROLA CHASSIS
TS-556, Y, VTS-556, Y

MODEL 21T64M (Ch. TS-556)

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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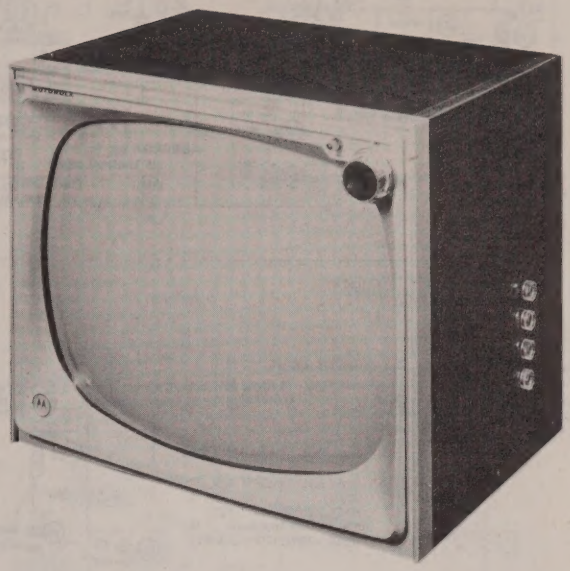
PHOTOFACT* Folder



# DISASSEMBLY INSTRUCTIONS

CABINET REMOVAL MODEL 21T64M

1. Remove 7 push-on type knobs from front and side of the cabinet.
2. Remove 8 metal screws holding the rear cover. Remove the antenna leads. Remove the rear cover.
3. Remove front bezel locking screw located at the upper right corner of the cabinet.
4. Remove 3 bezel retaining screws at bottom front of cabinet.
5. Remove bezel.
6. Remove 6 screws holding bottom cover. Remove bottom cover.
7. Remove speaker leads.
8. Remove 2 screws holding tuner bracket to cabinet.
9. Remove 8 screws holding cabinet to chassis (3 on each side and 2 in front).
10. Remove cabinet.



MODEL 21T64M (Ch. TS-556)

**CAUTION**

ONE SIDE OF AC LINE CONNECTED TO CHASSIS.

| | | | |
|---|---|---|---|
| TRADE NAME | Motorola | MODELS | CHASSIS |
| | | 21K123B, M, 21T64B, M, W | TS-556 |
| | | Y21K123B, M, Y21T64B, M, W | TS-556Y |
| | | 21T71BR | VTS-556 |
| | | Y21T71BR | VTS-556Y |
| MANUFACTURER | Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois | | |
| TYPE SET | Television Receiver | | |
| TUBES | VHF-Sixteen, UHF-Seventeen | | |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycle | RATING 150 Watts, 1.5 Amp. @ 117 Volts AC | |
| TUNING RANGE | Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) | | |

# SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

See steps 1 thru 5 of "Disassembly Instructions".

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button.

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, it is necessary to remove the chassis. (See "Disassembly Instructions".)

AGC

No provision is made to vary the AGC on this receiver.

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Horizontal Size control. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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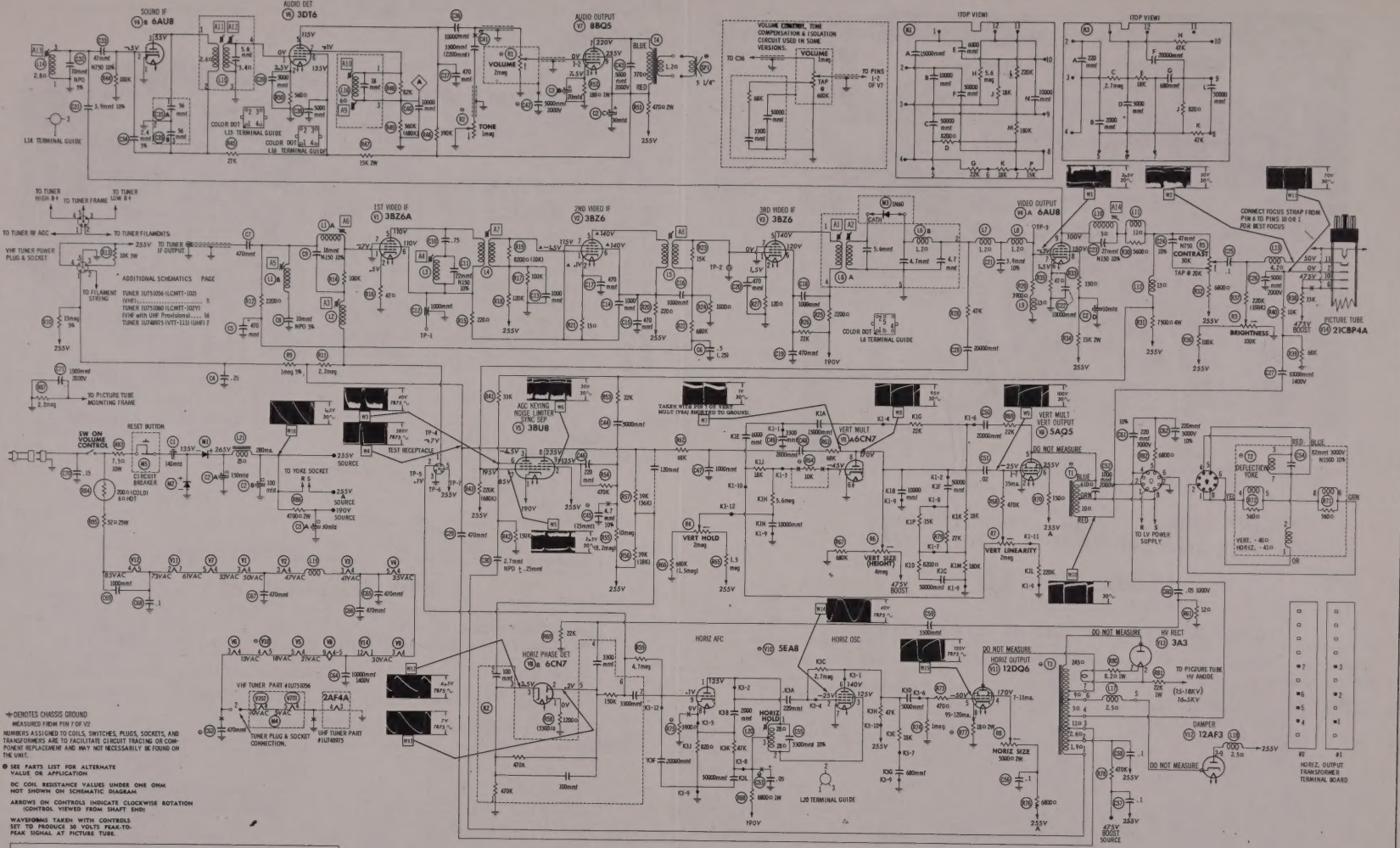
JA606



MOTOROLA CHASSIS
TS-556, Y, VTS-556, Y

MOTOROLA CHASSIS
TS-556, Y, VTS-556, Y

SET 464 FOLDER 1


SOUND IF V6a 6AU8
AUDIO DET V8 3DT6
AUDIO OUTPUT V7 8BQ5
VOLUME
TONE
1ST VIDEO IF V1 3BZ6A
2ND VIDEO IF V2 3BZ6
3RD VIDEO IF V3 3BZ6
VIDEO OUTPUT V4 6AU8
CONTRAST
BRIGHTNESS
PICTURE TUBE P14 21CBP4A
AGC KEYING NOISE LIMITER SYNC SEP V5 3BU8
VERT MULT V9 6CN7
VERT MULT VERT OUTPUT V10 5AQ5
VERT HOLD
VERT SIZE (HEIGHT)
VERT LINEARITY
HORIZ PHASE DET V6a 6CN7
HORIZ AFC
HORIZ OSC V16 5EA8
HORIZ OUTPUT V11 12DQ6
HV RECT V13 3A3
DAMPER V12 12AF3
HORIZ SIZE
HORIZ. OUTPUT TRANSFORMER TERMINAL BOARD
VHF TUNER PART #1U753056
UHF TUNER PART #1U748975
2AF4A
DEFLECTION YOKE
CIRCUIT BREAKER
SW ON VOLUME CONTROL
TEST RECEPTACLE
TO YOKE SOCKET
TO PICTURE TUBE MOUNTING FRAME
TO TUNER IF AGC
TO TUNER FILAMENTS
TO TUNER IF OUTPUT
TO TUNER HIGH B+
TO TUNER FRAME
TO TUNER LOW B+
VHF TUNER POWER PLUG & SOCKET
TO FILAMENT STRING
ADDITIONAL SCHEMATICS PAGE
TUNER 1U753056 (LCMTT-1021 VHF)
TUNER 1U753060 (LCMTT-1021Y1 VHF with UHF Provisions) 16
TUNER 1U748975 (VTT-1121 UHF) 7
L1A TERMINAL GUIDE
L1B TERMINAL GUIDE
L2 TERMINAL GUIDE
L3 TERMINAL GUIDE
L4 TERMINAL GUIDE
L20 TERMINAL GUIDE
COLOR DOT
VOLUME CONTROL, TONE COMPENSATION & ISOLATION CIRCUIT USED IN SOME VERSIONS.
TO CRT
TO PINS 1-2 OF V7
TAKEN WITH DIST OF VERT MULT (Y6A) GROUNDED TO GROUND.
DO NOT MEASURE
CONNECT FOCUS STRAP FROM PIN 4 TO PINS 10 OR 3 FOR BEST FOCUS
TO LV POWER SUPPLY
TO PICTURE TUBE HV ANODE
475V BOOST
475V BOOST SOURCE
DENOTES CHASSIS GROUND.
MEASURED FROM PIN 7 OF V2
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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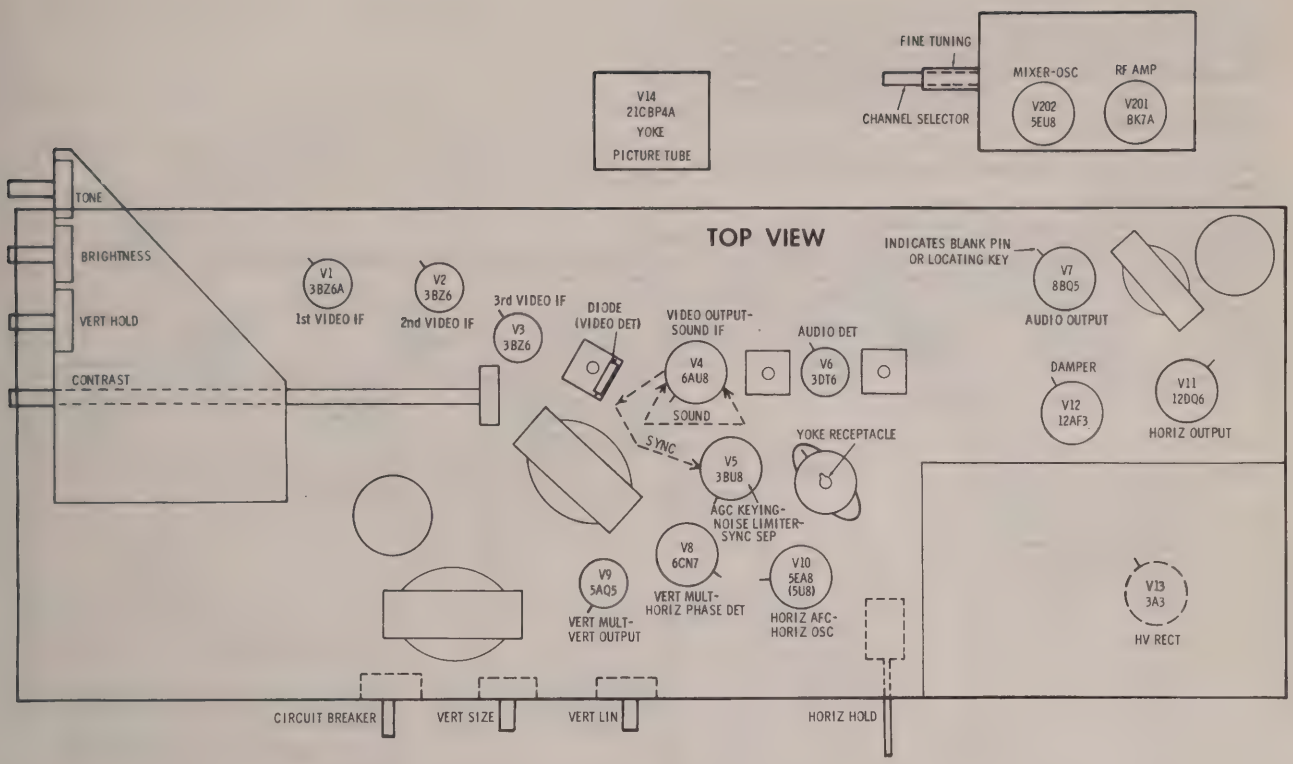
MOTOROLA CHASSIS TS-556, Y, VTS-556, Y

# TUBE PLACEMENT CHART




# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

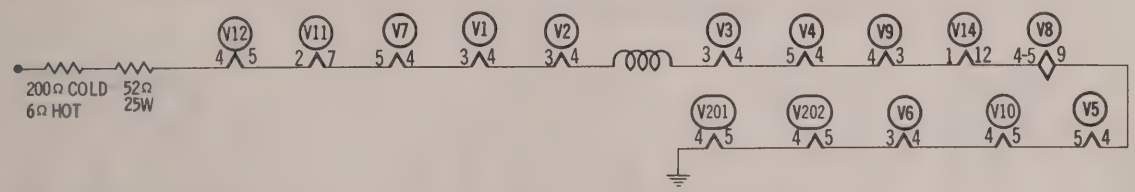
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, Rect. (B+)

SWEEP FAILURE
No raster, has sound V8, V10, V11, V12, V13, V14
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rect. (B+)
Vert. off freq. V8, V9
Horiz. off freq. V8, V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5, V8
No vert. or horiz. sync V5

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



# ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Short grid (pin 2) of V202 to chassis. Remove deflection yoke plug and connect a 1500Ω 50W resistor from TP7 to TP6. CAUTION: TP7 has B± voltage on it.
Set Contrast control fully counterclockwise.
Short antenna terminals together but not to chassis.
Connect the negative lead of a 4.5 volt bias supply to TP4. Positive to chassis.
Connect synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .001mfd | High side to TP2. Low side to chassis. | 44.0MC (10MC Swp) | 45.75MC | 13 | Vert. Amp. thru 47K to TP3. Low side to chassis. (Across Video Det. load) | A1, A2 | Adjust for maximum gain and symmetry of response similar to Fig. 1. with markers as shown. |
| 2. | Direct | Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis. | " | 47.25MC | " | " | A3, A4 | Adjust to place marker in trap notch. (Slug away from chassis). |
| 3. | " | " | " | 41.25MC | " | " | A5 | Adjust to place marker in trap notch. (Slug toward chassis). |
| 4. | " | " | " | 44.0MC | " | Vert. Amp. to TP1. Low side to chassis. | Mixer Plate Coil & A6 | Set generator output for 3 volts peak to peak on scope. Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Mixer Plate Coil affects center peak and A6 affects outside peaks. (Slugs away from chassis). |
| 5. | " | " | " | 42.25MC 45.75MC | " | Vert. Amp. thru 47K to TP3. Low side to chassis. | A7, A8 | Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Adjust A7 to place 42.25MC marker and A8 to place 45.75MC marker. If necessary, retouch Mixer Plate coil to correct for tilt. |

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust controls for normal picture and sound. Connect the DC probe of a VTVM to point (A). Common to chassis. Adjust A9 for maximum deflection choosing the one of two peaks which produces the highest voltage. While listening to the sound, retouch A9 for maximum volume with MINIMUM distortion. The top slug (A10) is a preset slug which is set near the top of the coil form and left there. Change to a very weak signal (this may be done by loosely coupling the antenna lead to the antenna terminals) that produces a hiss in the sound. Adjust A11 and A12 for maximum sound and MINIMUM distortion. Adjust A13 for maximum undistorted sound. If sound is not clear at this point, repeat the above procedure.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and turn the Contrast fully clockwise. Adjust the Fine Tuning until a strong 4.5MC beat pattern is visible. Adjust A14 to find the two points at which the beat pattern is just noticeable. Tune the slug to the center of these two points. (Use MINIMUM inductance which will result in no apparent beat pattern).

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 15

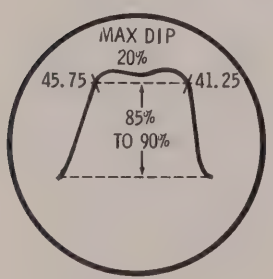



FIG. 1

FIG. 2

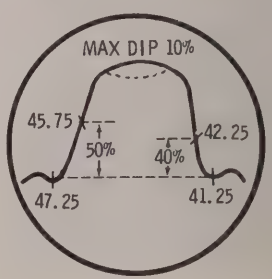
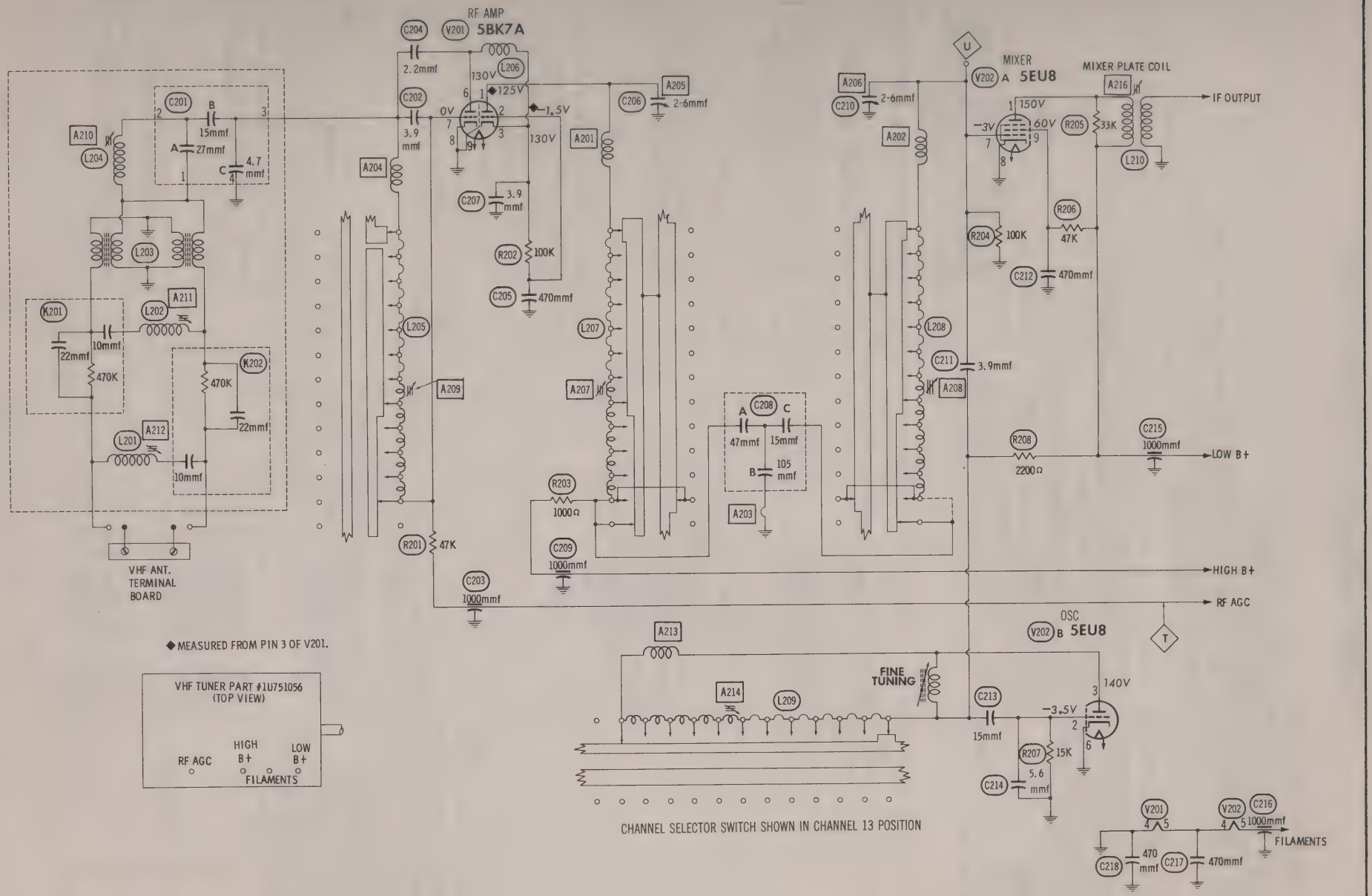



FIG. 3




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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# VHF TUNER 1U751056 (LCMTT-102)

## MOTOROLA CHASSIS TS-556, Y, VTS-556, Y

# TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Use an ISOLATION TRANSFORMER TO PROTECT the Test Equipment.
Allow a 20 minute warm-up period for the receiver and test equipment.
Remove yoke plug to prevent interference radiation.
Connect a 1500Ω 50W resistor between pins 3 and 5 of the Service Test Receptacle.
Suggested Alignment Tools: A205, A206 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A207, A208, A209 .. GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VHF RF AND MIXER ALIGNMENT

Connect a clip lead from point Ⓣ to chassis. DO NOT remove the tuner cover.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless other wise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | Two 120Ω Carbon Resistors | Across VHF antenna terminals with 120Ω in each lead. | 213MC | 211.25MC<br>215.75MC | 13 | Vert. Amp. thru 47K to point Ⓤ. Low side to chassis. | A201, A202, A203 | Preset A205 and A206 so that top of screws are .35" above tuner chassis. Adjust A201 and A202 for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. If necessary adjust A203 (Gimmick) for correct bandwidth. |
| 2. | " | " | " | " | " | " | A204 | Adjust for maximum amplitude and MINIMUM tilt. |
| 3. | " | " | 177MC | 175.25MC<br>179.75MC | 7 | " | A205, A206 | Adjust A205 for proper marker positions as in Fig. 201. Adjust A206 for MINIMUM tilt. |
| 4. | " | " | 85MC | 83.25MC<br>87.75MC | 6 | " | A207, A208, A209 | Adjust for maximum gain and symmetry of response similar to Fig. 201. with markers as shown. A207 places 83.25MC marker, A208 places 87.75MC marker and A209 controls tilt. |
| 5. | " | " | " | 94MC | " | " | A210 | Adjust to point where it just begins to affect high side of response curve. |
| 6. | " | " | 79MC | 77.25MC<br>81.75MC | 5 | " | | Check for response similar to Fig. 201. If necessary, make compromise adjustment of A207, A208 and A209. |
| | | | 69MC | 67.25MC<br>71.75MC | 4 | | | |
| | | | 63MC | 61.25MC<br>65.75MC | 3 | | | |
| | | | 57MC | 55.25MC<br>59.75MC | 2 | | | |
| 7. | " | " | 57MC | 45.25MC<br>43.5MC | " | " | A211, A212 | Adjust A211 for MINIMUM response at 45.25MC marker. Adjust A212 for MINIMUM response at 43.5MC marker. Re-adjust either or both for flat response consistent with minimum trap frequency amplitude. |

VHF OSCILLATOR ALIGNMENT

The tuner cover must be in place.
Set the Fine Tuning to the center of its range.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 8. | Two 120Ω Carbon Resistors | Across VHF antenna terminals with 120Ω in each lead. | 213MC | 215.75MC | 13 | Vert. Amp. thru 47K across Video Det. load. | A213 | Adjust to place marker in trap notch as in Fig. 202. |
| 9. | " | " | 207MC | 209.75MC | 12 | " | | Check to see that marker falls in trap notch as in Fig. 202. If not, make compromise adjustment of A213. |
| | | | 201MC | 203.75MC | 11 | | | |
| | | | 195MC | 197.75MC | 10 | | | |
| | | | 189MC | 191.75MC | 9 | | | |
| | | | 183MC | 185.75MC | 8 | | | |
| | | | 177MC | 179.75MC | 7 | | | |
| 10. | " | " | 85MC | 87.75MC | 6 | " | A214 | Adjust to place marker in trap notch as in Fig. 202. |
| 11. | " | " | 79MC | 81.75MC | 5 | " | | Check to see that marker falls in trap notch as in Fig. 202. If not, make compromise adjustment of A214. |
| | | | 69MC | 71.75MC | 4 | | | |
| | | | 63MC | 65.75MC | 3 | | | |
| | | | 57MC | 59.75MC | 2 | | | |

# TUNER PARTS LIST AND DESCRIPTIONS

1U751056(LCMTT-102)

## TUBES

| ITEM No. | USE | TYPE |
|---|---|---|
| V201 | RF Amplifier | 5BK7A |
| V202 | Mixer-Osc. | 5EU8 |

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C201A | 27 | | | | | | | |
| B | 15 | #51C747536 | | | | | | |
| C | 4.7 | | | | | | | |
| C202 | 3.9 | #21R128911 | | | C10V4C | | | 10TCC-V39 |
| C203 | 1000 | | EF-001 | MFT-1000 | | CCF-102 | | |
| C204 | 2.2 | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | | CNO-522 | 10TCC-V22 |
| C205 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | GP347 | 5GA-T47 |
| C206 | 2-6 | #21A747714 | | 829-6 | | CV-3 | | |
| C207 | 3.9 | #21R128911 | | | C10V4C | | | 10TCC-V39 |
| C208A | 47 | | | | | | | |
| B | 105 | #51C747700 | | | | | | |
| C | 15 | | | | | | | |
| C209 | 1000 | | EF-001 | MFT-1000 | | CCF-102 | | |
| C210 | 2-6 | #21A747712 | | 829-6 | | CV-3 | | |
| C211 | 3.9 | #21R128911 | | | C10V4C | | | 10TCC-V39 |
| C212 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | GP347 | 5GA-T47 |
| C213 | 15 | | NPO-SI 15 | TCZ-15 | C10Q15C | | CNO-415 | 10TCC-Q15 |
| C214 | 5.6 | #21K749376 | | | | | | 10TCC-V56 |
| C215 | 1000 | | EF-001 | MFT-1000 | | CCF-102 | | |
| C216 | 1000 | | EF-001 | MFT-1000 | | CCF-102 | | |
| C217 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | GP347 | 5GA-T47 |
| C218 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | GP347 | 5GA-T47 |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R201 | 47K | |
| R202 | 100K | |
| R203 | 1000Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R204 | 100K | |
| R205 | 33K | |
| R206 | 47K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R207 | 15K | |
| R208 | 2200Ω | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | MOTOROLA PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K201 | Antenna Filter | 10mmf, 22mmf, 470K | 51C747535 | |
| K202 | Antenna Filter | 10mmf, 22mmf, 470K | 51C747535 | |

## COILS (RF-IF)

| ITEM No. | USE | MOTOROLA PART No. | NOTES |
|---|---|---|---|
| L201 | IF Trap | 24K749367 † | |
| L202 | IF Trap | 24K749367 † | |
| L203 | Ant. Trans. | 24B749398 † | |
| L204 | FM Trap | 24K749366 † | |
| L205 | Ant. Coils | 1V748992 | Channel 2 thru 13 Includes wafer assy. |
| L206 | Cathode Choke | 24B747799 | |
| L207 | RF Coils | 1V748994 | Channel 2 thru 13 Includes wafer assy. |

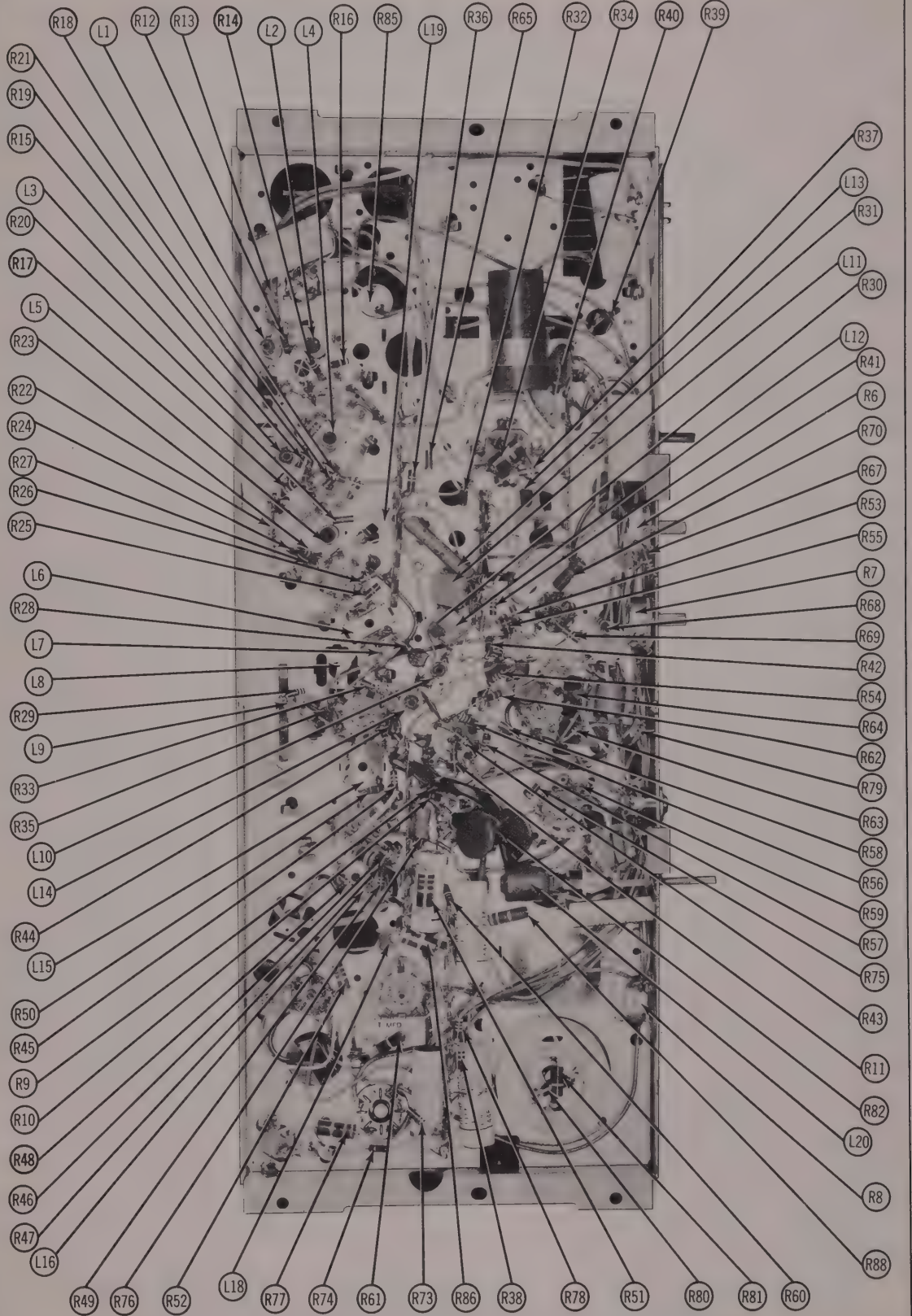
† Part of M1.

| ITEM No. | USE | MOTOROLA PART No. | NOTES |
|---|---|---|---|
| L208 | Mixer Grid Coils | 1V748993 | Channel 2 thru 13 Includes wafer assy. |
| L209 | Osc. Coils | 1V748991 | Channel 2 thru 13 Includes wafer assy. |
| L210 | Mixer Plate Coil | 24B747838 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | MOTOROLA PART No. | NOTES |
|---|---|---|---|
| M201 | Ant. Input Assy. | 1V748995 | Includes C201, K201, K202, L201, L202, L203, L204 |
| | Shaft | 1V751057 | Fine Tuning (Includes Cam (LCMTT-102) |
| | Shaft | 1V751064 | Fine Tuning (Includes pulley (LCMTT-102Y) |
| | Shaft | 9B747745 | Channel Selector |

CHASSIS-BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION




CHASSIS-BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

MOTOROLA CHASSIS
TS-556, Y, VTS-556, Y

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | CBS / GENERAL ELECTRIC / RAYTHEON / SYLVANIA — USE | TYPE |
|---|---|---|
| V1 | 1st Video IF Amp. | 3BZ6A |
| V2 | 2nd Video IF Amp. | 3BZ6 |
| V3 | 3rd Video IF Amp. | 3BZ6 |
| V4 | Video Output-Sound IF Amp. | 6AU8 |
| V5 | AGC Keying-Noise Limiter-Sync Sep | 3BU8 |
| V6 | Audio Det. | 3DT6 |
| V7 | Audio Output | 2DQ6 |
| V8 | Vert. Mult.-Horiz. Phase Det. | 6CN7 |
| V9 | Vert. Mult.-Vert. Output | 6AQ8 |
| V10 | Horiz. AFC-Horiz. Osc. | 6AS8 (SU8) * |
| V11 | Horiz. Output | 12DQ6 |
| V12 | Damper | 12AZ3 |
| V13 | HV Rectifier | 3A3 |

* Alternate.

## PICTURE TUBE

| ITEM No. | REPLACEMENT DATA: MOTOROLA Part No. | GENERAL ELECTRIC Part No. | RCA Part No. | RAYTHEON Part No. | SYLVANIA Part No. | NOTES |
|---|---|---|---|---|---|---|
| V14 | 21CBP4A | 21CBP4A ① | 21CBP4A ① | 21CBP4/ 21CBP4A | 21CBP4/ 21CBP4A ③ | ① Aluminized. ③ Silver Screen 85" |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING: CAP | VOLT | REPLACEMENT DATA: MOTOROLA Part No. | ALLEN-BRADLEY Part No. | AEROVOX Part No. | CORNELL-DUBILIER Part No. | MALLORY Part No. | PYRAMID Part No. | SPRAGUE Part No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 140 | 150 | 23 KT37630 | | PRS1530 | BR15G15 | W5437 | TD-150-150 | TVA-1423 | |
| C2A | a150 | 300 | 23 KT61006 | | AFH94-55-94 | BR30G15 | FP945.55 | | TVL5-4587.3* | |
| B | a100 | 300 | | | | BR30G8 | TC98 | | | |
| C | a30 | 300 | | | | | | | | |
| D | 10 | 300 | | | | | | | | |
| C3A | a30 | 300 | 23 KT48723 | AF23-85 | BO830 | FP27.86 | TMD-71 | TVL-3605 | | |
| B | a20 | 25 | | | | | | | | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA: AEROVOX Part No. | CENTRALAB Part No. | CORNELL-DUBILIER Part No. | ELMENCO Part No. | MALLORY Part No. | SPRAGUE Part No. |
|---|---|---|---|---|---|---|---|---|
| C4 | .25 100V | | P288N-25 | | CUB2P25 | 1DP-3-254 | GEM-2025 | 2TM-P25 |
| C5 | .1 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C6 | .5 100V | (.35mfd 100V) | P288N-5 | | CUB2P5 | 2DP-5-504 | GEM-205 | 2TM-P5 |
| C7 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C8 | 10 NPO 5% | | NPO-DI 10 | DTZ-10 | CI0Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C9 | 18 N150 10% | #21R130578 | | | | ** | | 10TCP-Q18 |
| C10 | .75 | | NPO-SI 1.0 | TCZ-1 | | ** | CNO-S10 | 10TCC-V10 |
| C11 | 22 N150 10% | #21R130539 | | | | ** | | 10TCP-Q10 |
| C12 | 1000 | | KF-001 | MFT-1000 | | CCF-102 | | |
| C13 | 1000 | | BPD-001 | BD-102 | BYA10D1 | CCD-102 | B-210 | 5EK-D10 |
| C14 | 1000 | | BPD-001 | BD-102 | BYA10D1 | CCD-102 | B-210 | 5EK-D10 |
| C15 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C16 | 1000 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C17 | 1000 | | BPD-001 | BD-102 | BYA10D1 | CCD-102 | B-210 | 5EK-D10 |
| C18 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C19 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C20 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C21 | 3.9 10% | | | | CI0V4C | | | 10TCC-V39 |
| C22 | 10000 | | BPD-01 | BD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C23 | 27 N150 10% | #21R119896 | | | | ** | | 10TCP-Q27 |
| C24 | 47 N750 10% | | N750-DI 47 | DTN-47 | | CCTU-470 | CN7-447 | 10TCU-Q47 |
| C25 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C26 | 5000 2000V | | | DD50-502 | HVC20D5 | | 2HV-347 | TVM-356 |
| C27 | 10000 1400V | | DAC-37 | DD-16-01 | HVE16S1 | 16DP-3-103 | 2HV-110 | MB-S1 |
| C28 | 30000 | | BPD-03 | BPD-303 | BYB40S1 | CCD-303 | B-125 | 5HK-S30 |
| C29 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C30 | 3.7 NPO ± .25mmf | #21R115599 | | | | | | 10TCC-V37 |
| C31 | 3.9 10% | #21R115953 | | | CI0V4C | | | 10TCC-V39 |
| C32 | 10 NPO 5% | | NPO-DI 10 | DTZ-10 | CI0Q1C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C33 | 47 N750 10% | | N750-DI 47 | DTN-47 | CI0Q4U | CCTU-470 | CN7-447 | 10TCU-Q47 |
| C34 | 2.4 ±% | #21R107552 | | | | | | |
| C35A | 56 | #51B751303 | TC-56 | DD-560 | L10Q56 | CCD-560 | GP456 | 10TS-Q56 |
| B | 56 | | DK-56 | DD-560 | L10Q56 | CCD-560 | GP456 | 10TS-Q56 |
| C36 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C37 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C38 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-350 | 5HK-D50 |
| C39 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-350 | 5HK-D50 |
| C40 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C41 | 3300 | ① (3300mmf)* | BPD-0033 | DD-332 | BYA10D33 | CCD-333 | B-233 | 5HK-D33 |
| C42 | 5000 2000V | ③ | | DD50-502 | HVC20D5 | | 2HV-347 | TVM-356 |
| C43 | 5000 2000V | | | DD50-502 | HVC20D5 | | 2HV-347 | TVM-356 |
| C44 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-350 | 5HK-D50 |
| C45 | 4.7 10% | | NPO-DI 4.7 | TCZ-4R7 | CI0V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C46 | 220 | | BPD-00022 | DD-221 | L10T22 | CCD-221 | B-322 | 5GA-T22 |
| C47 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-103 | B-210 | 5HK-D10 |
| C48 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C49 | 3300 | | BPD-0033 | DD-332 | BYA10D33 | CCD-332 | B-233 | 5EK-D33 |
| C50 | 30000 | | BPD-03 | BPD-303 | BYB40S1 | CCD-303 | B-125 | 5HK-S30 |
| C51 | .02 600V | | P588N-02 | DD-303 | CUB6S2 | 6DP-3-303 | GEM-612 | 6TM-S2 |
| C52 | 1000 2000V | | HVD-10-1000 | DD50-102 | HVB20D1 | | 2HV-310 | 30GA-D10 |
| C53 | .05 600V | ③ | P488N-05 | DD-503 | CUB6S5 | 6DP-3-503 | GEM-615 | 6TM-S5 |
| C54 | 82 3000V N1500 10% | #21R129505 | | | | | | |
| C55 | 3300 10% | | 1467-0033 | | 1R5D33 | CM-20B-102K | MC1462 | MS-233 |
| C56 | 4000 | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C57 | .1 600V | | P588N-1 | DF-104 | CUB6P1 | 6DP-4-104 | GEM-601 | 6TM-P1 |
| C58 | .1 600V | | P588N-1 | DF-104 | CUB6P1 | 6DP-4-104 | GEM-601 | 6TM-P1 |
| C59 | 3300 | | BPD-0033 | DD-332 | BYA10D33 | CCD-332 | B-233 | 5HK-D33 |
| C60 | .05 1000V | | P1088N-05 | | CUB10S5 | 10DP-5-503 | GEM-1015 | 10TM-S5 |
| C61 | 220 3000V 10% | #21R125168 | | | | | | |
| C62 | 220 3000V 10% | #21R125168 | | | | | | |
| C63 | 470 | ③ | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C64 | 10000 1400V | | DAC-37 | DD16-103 | HVE16S1 | 16DP-3-103 | 2HV-110 | B1-S10 |
| C65 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C66 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C67 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C68 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C69 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C70 | .15 400V | | P488N-15 | | CUB4P15 | 4DP-4-154 | GEM-4015 | 4TM-P15 |
| C71 | 1500 2000V | | | DD50-152 | HVB20D15 | | 2HV-315 | 30GA-D15 |

① Not used in Ch. VTS-556.
③ Not used in some versions.
* Alternate value.
# Motorola Part Number.
** Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## CONTROLS

| ITEM No. | RATING: RESISTANCE | WATTS | REPLACEMENT DATA: MOTOROLA Part No. | CENTRALAB Part No. | CLAROSTAT Part No. | IRC Part No. | MALLORY Part No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 2meg | ½ | 18K752396 | AB-76 | A47-2meg-Z | GJ3-159 | U58 | Volume, Note 1 |
| B | Shaft | | | AK-8 | RS-3/M | NQ | DS-37 | |
| C | Switch | | | 76-1 | SWE-12 | 76-1 | U8-26 | |
| R2A | 1meg | ½ | 18K749387 | B-70 | A47-1meg-Z | GJ3-137 | U59 | Tone, Note 2 |
| B | Shaft | | | AK-8 | RS8-3 | Not Req. | Not Req. | |
| R3A | 100K | ½ | 18K739548 | B-40 | A47-100K-S | QJ1-128 | TA15L | Brightness |
| B | Shaft | | | Not Req. | RS8-3 | Not Req. | Not Req. | |
| R4A | 2meg | ½ | 18K748948 | B-76 | A47-2meg-S | QJ1-159 | TA26L | Vert. Hold |
| B | Shaft | | | Not Req. | RS8-3 | Not Req. | Not Req. | |
| R5 | 30K | ½ | 18K748735 | | | | | Contrast |
| | 20K tap | | | | | | | |
| R6A | 4meg | ½ | 18K743524 | AB-96 | A47-4meg-S | SU1-340 | PTA56L | Vert. Size (Height) |
| B | Shaft | | | AK-19 | RN-3 | TM4 | Not Req. | |
| R7A | 1meg | ½ | 18K743523 | AB-76 | B47-2meg-S | SU1-139 | PTA28L | Vert. Lin. |
| B | Shaft | | | AK-19 | Not Req. | TM6 | Not Req. | |
| R8A | 5000Ω | 2(WW) | 17B746869 | | A43-5000 | WP8-5000 | FL5-K | Horiz. Size |
| B | Shaft | | | | RN-3 | Not Req. | Not Req. | |

Note 1. Some versions may use 1meg, 500K tap, in this application (Part #18K751904)
Note 2. Not used in Ch. VTS-556.

## RESISTORS

**All wattages 1/2 watt, or less, unless otherwise listed.**

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R9 | 1meg 5% | |
| R10 | 15meg 5% | |
| R11 | 2.2meg | |
| R12 | 2200Ω | |
| R13 | 10K 3W | |
| R14 | 100K | |
| R15 | 220Ω | |
| R16 | 47Ω | |
| R17 | 100K | |
| R18 | 120K | |
| R19 | 8200Ω | (10K) * |
| R20 | 220Ω | |
| R21 | 15Ω | |
| R22 | 680K | |
| R23 | 15K | |
| R24 | 1000Ω | |
| R25 | 2200Ω | |
| R26 | 22K | |
| R27 | 120Ω | |
| R28 | 47K | |
| R29 | 3900Ω | |
| R30 | 5600Ω | |
| R31 | 7950Ω 4W | |
| R32 | 6800Ω | |
| R33 | 330Ω | |
| R34 | 15K 2W | |
| R35 | 47Ω | |
| R36 | 100K | (100K) * |
| R37 | 220K | |
| R38 | 33K | |
| R39 | 68K | |
| R40 | 10K | |
| R41 | 33K | |
| R42 | 150K | |
| R43 | 220K | (680K) * |
| R44 | 100K | |
| R45 | 27K | |
| R46 | 390K | |
| R47 | 15K 2W | |
| R48 | 82K | |
| R49 | 560K | (680K) * |
| R50 | 560Ω | |
| R51 | 470Ω 2W | |
| R52 | 180Ω 1W | |
| R53 | 22K | |
| R54 | 470K | |
| R55 | 10meg | (8.2meg) * |
| R56 | 39K | (16K) * |
| R57 | 39K | (36K) * |
| R58 | 1200Ω | (3300Ω)* |
| R59 | 4.7meg | |
| R60 | 22K | |
| R61 | 15K | |
| R62 | 68K | |
| R63 | 68K | |
| R64 | 10K | Note 1 |
| R65 | 1.5meg | (1.5meg) * |
| R66 | 680K | |
| R67 | 680K | |
| R68 | 470K | |
| R69 | 22K | |
| R70 | 150Ω | |
| R71 | 560Ω | |
| R72 | 560Ω | |
| R73 | 470Ω | |
| R74 | 1meg | |
| R75 | 3900Ω | Note 1 |
| R76 | 680Ω | |
| R77 | 18Ω 2W | Note 1 |
| R78 | 470K | |
| R79 | 27K | |
| R80 | 8.2Ω 1W | #6K128098 |
| R81 | 22K 1W | |
| R82 | 680Ω | |
| R83 | 7.5Ω 10W | #17K748494 |
| R84 | 200Ω COLD 6Ω HOT | #6K746412 |
| R85 | 52Ω 25W | #17K751541 |
| R86 | 4700Ω 2W | |
| R87 | 2.2meg | |
| R88 | 6800Ω 1W | |

\# Motorola Part Number. * Alternate value. Note 1. Not used in some versions.

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | MOTOROLA Part No | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Vert. Sweep Circuit | 6000mmf, 10000mmf, 10000mmf, 15000mmf, 50000mmf, 5000mmf, 8200Ω, 15K, 18K, 18K, 22K, 180K, 230K, 5.6meg | 51K751097 | |
| K2 | Horiz. AFC Circuit | 100mmf, 100mmf, 3300mmf, 3300mmf, 150K, 470K, 470K | 51K751094 | |
| K3 | Horiz. Sweep Circuit | 220mmf, 680mmf, 2000mmf, 5000mmf, 20000mmf, 50000mmf, 820Ω, 15K, 47K, 47K, 2.7meg | 51K751096 | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA: MOTOROLA Part No. | Greenar Part No. | Meissner Part No. | Merit Part No. | Miller Part No. | Ram Part No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L1A | 1st Video IF | 24K747586 | | | | | | |
| B | 4l. 25MC Trap | | | | | | | 8.5uh |
| L2 | 47.25MC Trap | 24K747585 | 17-4528 ▫ | 17-4528 ▫ | TV-153 ▫ | 6225 ▫ | | 1.8uh |
| L3 | 47.25MC Trap | 24K747585 | 20-1049 | 20-1049 | TV-153 ▫ | | | 8.5uh |
| L4 | 2nd Video IF | 24K747587 | 17-4522 | 17-4522 | TV-130 | 6219 | VF-3 | 330uh |
| L5 | 3rd Video IF | 24K747587 | 17-4522 | 17-4522 | TV-130 | 6219 | VF-3 | |
| L6A | 4th Video IF | 24K750722 † | | | | | | |
| B | Resonant Choke | 24K119869 | | | | | | 8.5uh |
| L7 | Resonant Choke | 24K747772 | | | | | | 1.8uh |
| L8 | Resonant Choke | 24K119869 | | | | | | 8.5uh |
| L9 | Shunt Peaking Coil | 24K749669 | | | | | | 330uh |
| L10 | 4.5MC Trap | 24K719290 | 20-1004 | 20-1004 | TV-151 | 1469 ▫ | SF-3 | |
| L11 | Series Peaking Coil | 24K749670 | 19-3250 | 19-3250 | TV-185 | 6181 | VP-6 | 240uh ① |
| L12 | Shunt Peaking Coil | 24K749669 | 19-3330 | 19-3330 | TV-200 | 6132 | VP-7 | 330uh |
| L13 | Series Peaking Coil | 24K750535 | 19-3100 | 19-3100 | TV-194 | 6112 | | 104uh |
| L14 | 1st Sound IF | 24C751034 | | | | 1470-A ▫ | | |
| L15 | 2nd Sound IF | 24D751031 | | | | | | |
| L16 | Quadrature Coil | 24K751492 | | | | | SD-5 | |
| L17 | RF Choke | 24B747171 | | | | 4611 | | 7.5uh |
| L18 | RF Choke | 24B747171 | | | | | | 7.5uh |
| L19 | Fil. Choke | 24K745675 | 19-1001 | 19-1001 | BC-562 | 4504 | | 1.5uh |

▫ Disregard tap. ▫ Remove shield. † Includes M3. ① Includes 56000 resistor.

## TRANSFORMER (HORIZ. OSC.)

| ITEM No. | DC RES. PRI. | DC RES. SEC. | REPLACEMENT DATA: MOTOROLA Part No. | Halldorson Part No. | Merit Part No. | Miller Part No. | Ram Part No. | Thordarson Part No | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| L20 | 56Ω | | 24C746779 | HS-7 * | | 6211 ▫ | | HS-7 * | Horiz. Osc. tapped ②28Ω |

* Drill new mounting hole and parallel with 3900mmf cap. ▫ Drill new mounting hole.

## FILTER CHOKE

| ITEM No. | RATINGS: CURRENT (Measured) | DC RES. | INDUCTANCE @ CURRENT 1000 ~(.) | REPLACEMENT DATA: MOTOROLA Part No. | Halldorson Part No. | Merit Part No. | Ram Part No. | Stancor Part No | Thordarson Part No. | Triad Part No. |
|---|---|---|---|---|---|---|---|---|---|---|
| L21 | .280A | 25Ω | .9 Hy. | 25K751753 | | | | | | |

## TRANSFORMERS (SWEEP CIRCUITS)

| ITEM No. | USE | REPLACEMENT DATA: MOTOROLA Part No | Halldorson Part No | Merit Part No | Ram Part No | Rogers Part No | Stancor Part No | Thordarson Part No | Triad Part No |
|---|---|---|---|---|---|---|---|---|---|
| T1 | Vert. Output | 24K744974-W | 26873 ① | A-3855 | V316 ③ | VO38 | VO-106 | 26873 ① | A-116X ④ |
| | Alt. Vert. Output | 25K747974 | 26873 ① | A-3855 | V316 ③ | VO38 | VO-106 | 26873 ① | A-116X ④ |
| T2 | Yoke-Horiz. (34MH) (90°)-Vert. (39MH) | 24K747492-W | Y-45 ⑤ ⑥ | MDF-97 ⑤ ⑥ | MO-8 | | DY-32A | Y-45 ⑤ ⑥ | Y-45-2 |
| | Alt. Yoke | 24K747492 | Y-45 ⑤ ⑥ | MDF-97 ⑤ ⑥ | MO-8 | | DY-32A | Y-45 ⑤ ⑥ | Y-45-2 |
| | Rear Cover & Centering Device | 59C731145 | | | | | | | YC-1 |
| | Yoke Retainer | 42A735237 ⑦ | | | | | | | CL-1 |
| | Retainer Clamp | 42A735175 ⑦ | | | | | | | |
| T3 | Horiz. Output | 24K748397-W ⑦ | | | | | | | |
| | Primary Coil | 24K748398 | | | MOC-2 | | | | |
| | Secondary Coil | 24K745108 | | | | MT-3 | | | |
| | Alt. Horiz. Output | 24K748397 ⑦ | | | | | | | |

① Drill new mounting hole(s).
③ Cut and tape green lead.
④ Use 8 to 1 turns ratio.
⑤ Remove jumper from yoke terminals #3 and #6. Remove horizontal yoke damping capacitor from yoke terminals #1 and #2, and install across yoke terminals #3 and #7.
⑥ Use original leads, plug, and core clamp. Connect same as original.
⑦ Remove jumper from yoke terminals #1 and #4.
⑧ Complete assembly.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE PRI. | IMPEDANCE SEC. | REPLACEMENT DATA: MOTOROLA Part No. | Halldorson Part No. | Merit Part No. | Ram Part No. | Stancor Part No. | Thordarson Part No. | Triad Part No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| T4 | 6200Ω | 8-8Ω | 25K749665 | 26945 | A-2900 | AU-804 | A-3656 | 26946 | S-51X | |

## SPEAKER

| ITEM No. | TYPE: SIZE | TYPE: FIELD | TYPE: V. C. IMP. | REPLACEMENT DATA: MOTOROLA Part No. | QUAM Part No. | NOTES |
|---|---|---|---|---|---|---|
| SP1 | 5 1/4" | PM | 8-8Ω | 50K751799 ① | 5A15TZ8.4 | ① Models Y2IT84B, M, 2IT84B, M |
| | 8½ X 6 | PM | 8-8Ω | 50K751192 ② | | ② Models Y2IK123B, M, 2IK123B, M |

## RECTIFIERS

| ITEM No. | RATING: CURRENT (Measured) | REPLACEMENT DATA: MOTOROLA Part No. | FEDERAL Part No. | INTERNATIONAL Part No. | SARKES TARZIAN Part No. | SYLVANIA Part No. | NOTES |
|---|---|---|---|---|---|---|---|
| M1 | .280A | 48K122479 ① | 1241AH ① | T350 ② | 350A ① | SR500 ② | ① Selenium Type |
| M2 | .280A | 48K122479 ① | 1241AH ① | T350 ② | 350A ① | SR500 ② | ② Silicon Type |

## CRYSTAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA: MOTOROLA Part No. | CBS Part No. | RAYTHEON Part No. | SYLVANIA Part No. | NOTES |
|---|---|---|---|---|---|---|
| M3 | 1N80 | 48K747548 | 1N80 | 1N80 | 1N80 | Video Detector (Pigtail) |

## MISCELLANEOUS

| ITEM No. | PART NAME | MOTOROLA Part No. | NOTES |
|---|---|---|---|
| M4 | Tuner | 1U751056 | VHF (LCMTT-102) Ch. TS-556, VTS-556 |
| | Tuner | 1U753660 | VHF with UHF provision (LCMTT-102Y) Ch. TS-556Y, VTS-556Y |
| | Tuner | 1U748975 | UHF (VTT-111) Ch. TS-556Y, VTS-556Y |
| M5 | Circuit Breaker | 80C750604 | |

## CABINETS & CABINET PARTS

**(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)**

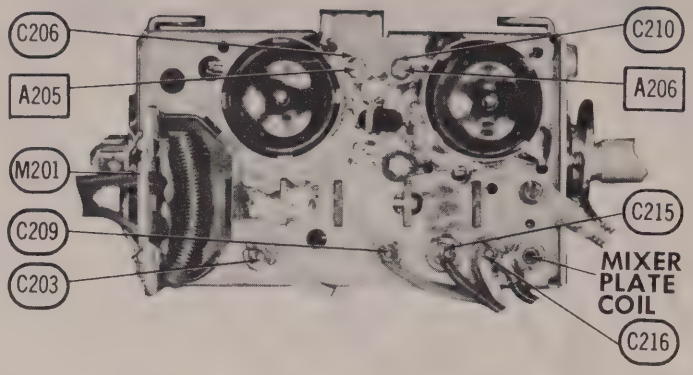
| NAME | PART NO | DESCRIPTION |
|---|---|---|
| Safety Glass | 61C751223 | All models except Y2ITTBR, 2ITTBR |
| Safety Glass | 61K751733 | Models Y2ITTBR, 2ITTBR |
| Bezel | 12E750327 | VHF Models |
| Bezel | 13K752255 | UHF-VHF Models |
| Knob | 36K751537 | VHF Channel Selector, All Models except Y2ITTBR, 2ITTBR |
| Knob | 36C752844 | VHF Channel Selector, Models Y2ITTBR, 2ITTBR |
| Knob | 36C751269 | Fine Tuning, All VHF Models except 2ITTBR |
| Knob | 36K752187 | Fine Tuning, Model 2ITTBR |
| Knob | 36K751370 | Fine Tuning, UHF-VHF Models |
| Dial Scals | 34C751298 | UHF |
| Knob | 36B751538 | Off-On-Volume |
| Knob | 36B751280 | Brightness, All Models except Y2IK123B, M, 2IK123B, M |
| Knob | 36K751283 | Brightness, Models Y2IK123B, M, 2IK123B, M |
| Knob | 36K751262 | Contrast, All Models except Y2IK123B, M, 2IK123B, M |
| Knob | 36K751265 | Contrast, Models Y2IK123B, M, 2IK123B, M |
| Knob | 36K751261 | Vert. Hold, All Models except Y2IK123B, M, 2IK123B, M |
| Knob | 36K751264 | Vert. Hold, Models Y2IK123B, M, 2IK123B, M |
| Knob | 36K752440 | Tone, Models Y2IT84B, M, W, 2IT84B, M, W |
| Knob | 36K752441 | Tone, Models Y2IK123B, M, 2IK123B, M |

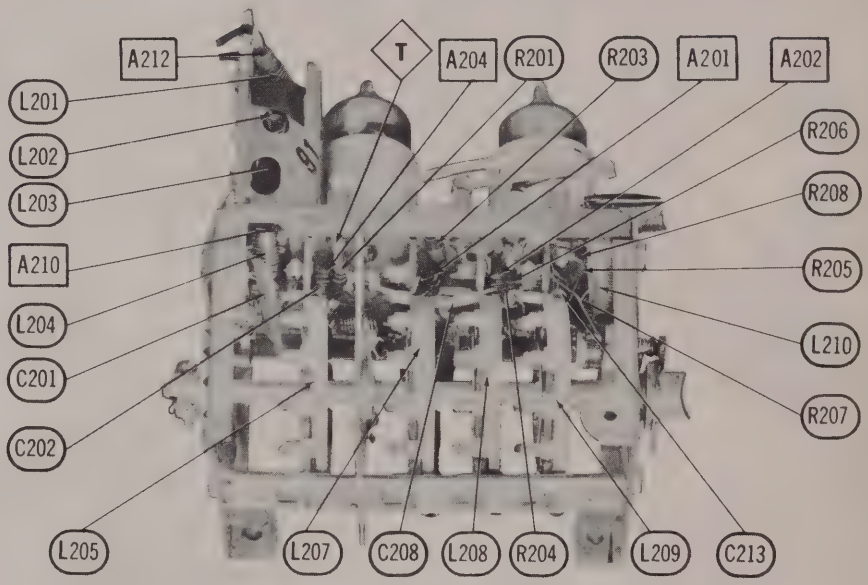
## WIRING DATA

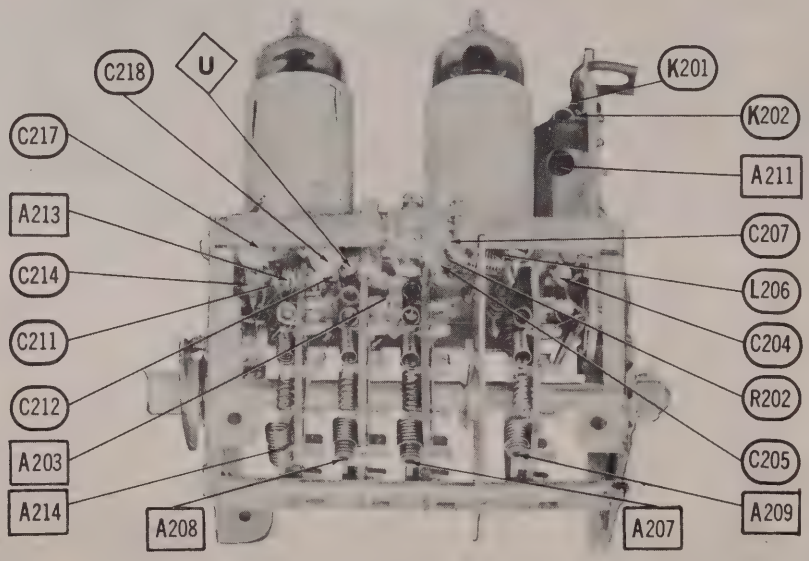
| | |
|---|---|
| High Voltage Lead | Use BELDEN No. 8069 |
| Shielded Hook-up Wire | Use BELDEN No. 8585 (Single Conductor) 8738 (Two Conductor) |
| General-use Unshielded Hook-up Wire | Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors |
| Power Cord (Interlock Type) | Use BELDEN No. 8874 |
| 300Ω Tuner Input Lead | Use BELDEN No. 8225 |
| 300Ω Antenna Lead-In | Use BELDEN No. 8230 or 8275 |
| Antenna Rotor Cable | Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor |

MOTOROLA CHASSIS TS-556, Y, VTS-556, Y

FOLDER 1




VHF TUNER 1U751056 (LCMTT-102)

# TUNER ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 12. | Fig. 203 | Thru network to UHF input receptacle of VHF tuner. | 44MC (10MC Swp) | 41.25MC 45.75MC | UHF | Vert. Amp. thru 47K to point ⓤ. Low side to chassis. | A215, A216 | Adjust for maximum gain and symmetry of response similar to Fig. 201 with markers as shown. |

UHF TUNER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attemped in the field.

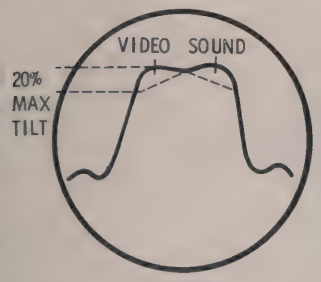



FIG. 201

FIG. 202

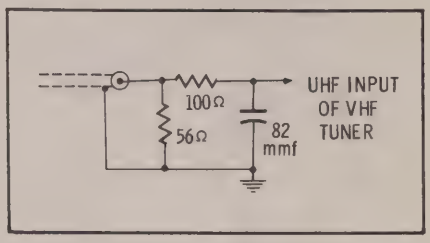
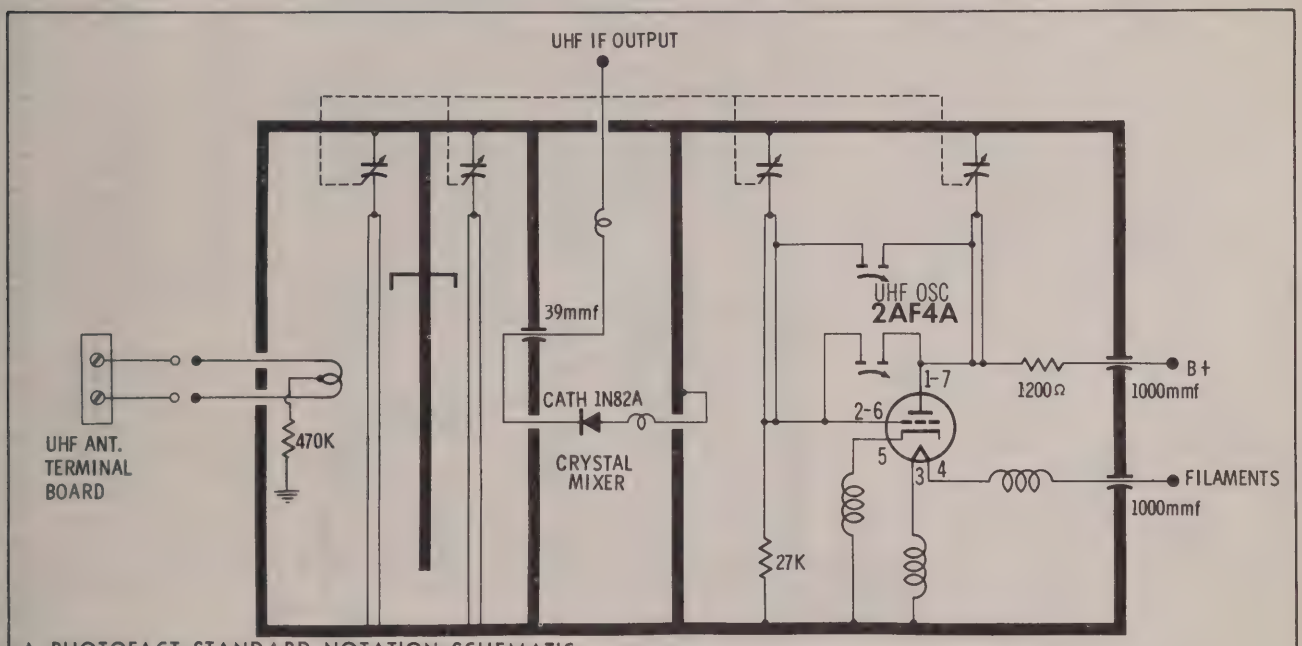



FIG. 203




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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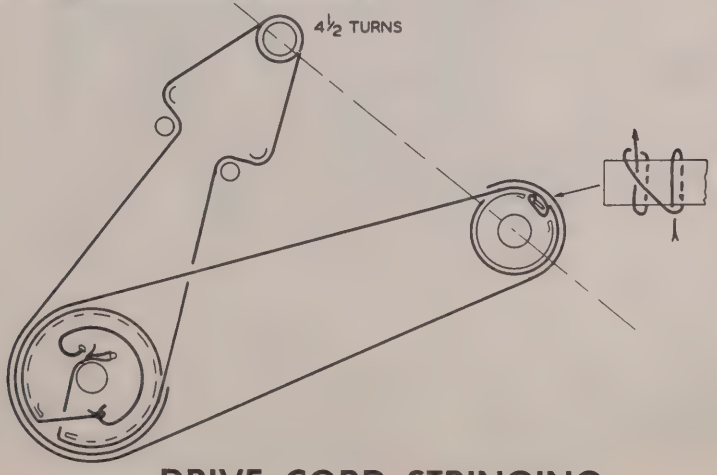
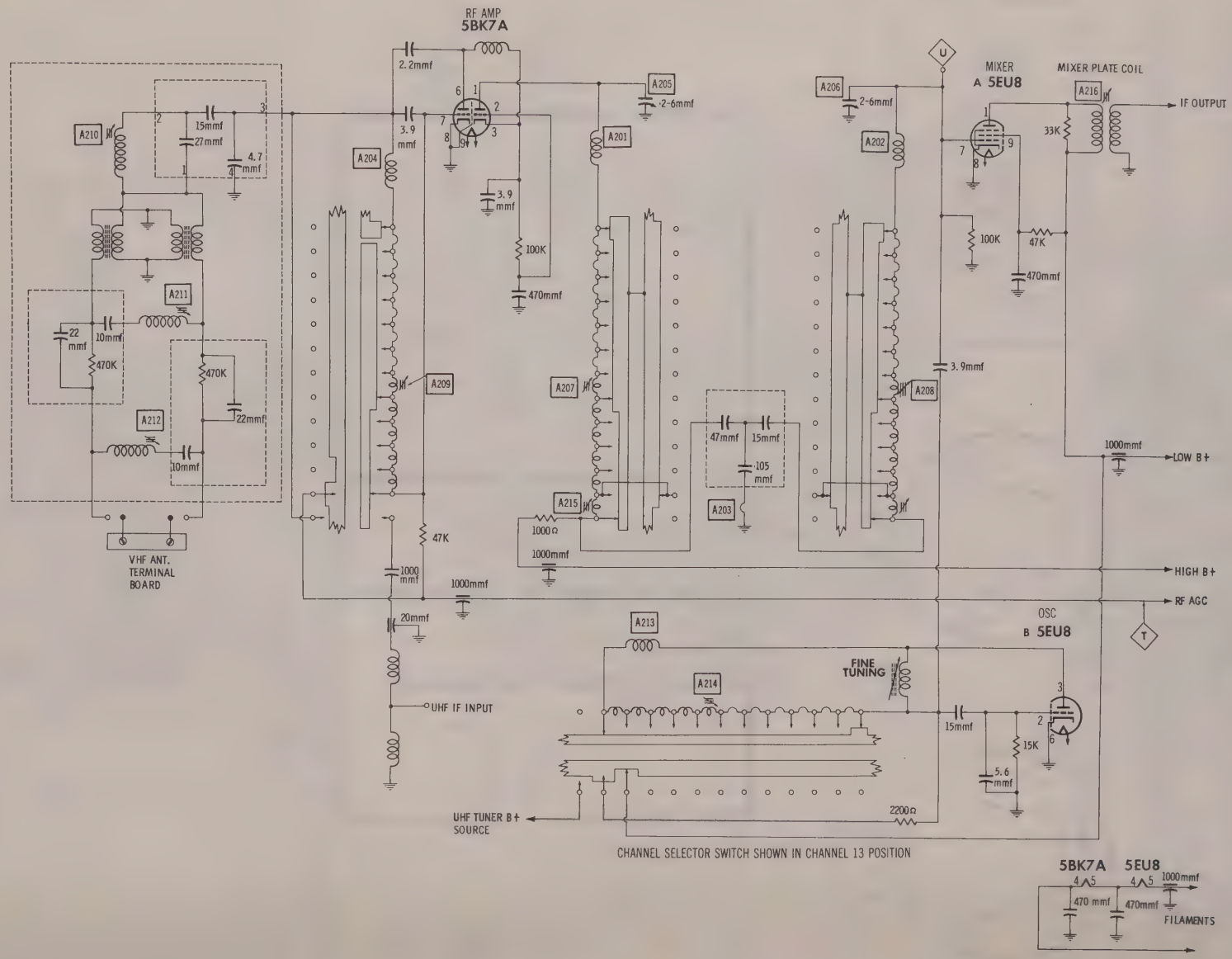
## UHF TUNER SCHEMATIC 1U748975 (VTT-111)




## DRIVE CORD STRINGING




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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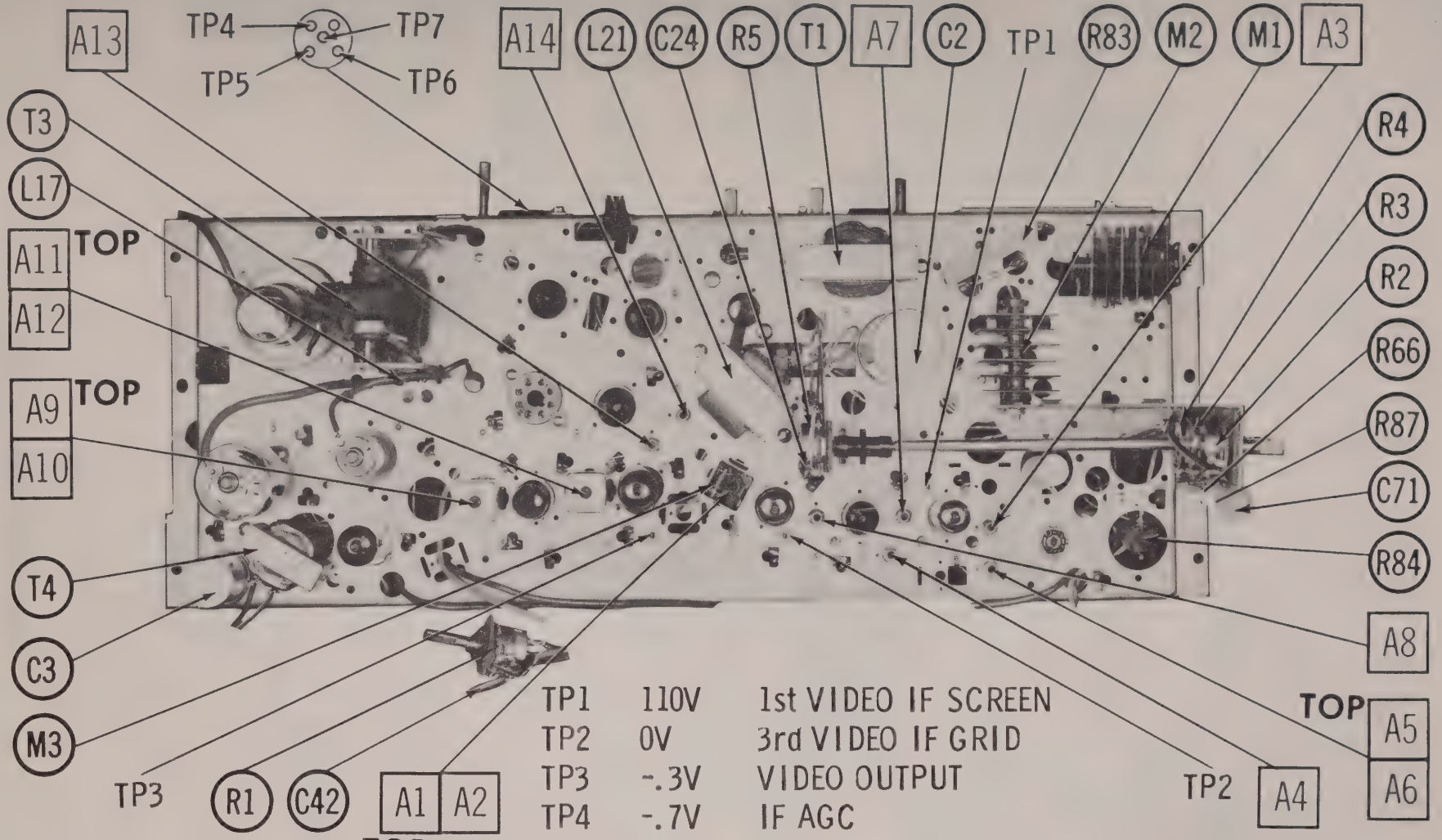
# VHF TUNER with UHF Provisions 1U751060 (LCMTT-102Y)




| | | |
|---|---|---|
| TP1 | 110V | 1st VIDEO IF SCREEN |
| TP2 | 0V | 3rd VIDEO IF GRID |
| TP3 | -.3V | VIDEO OUTPUT |
| TP4 | -.7V | IF AGC |
| TP5 | .15V | HORIZ AFC |
| TP6 | 0V | GROUND |
| TP7 | 255V | B+ |

CHASSIS TOP VIEW

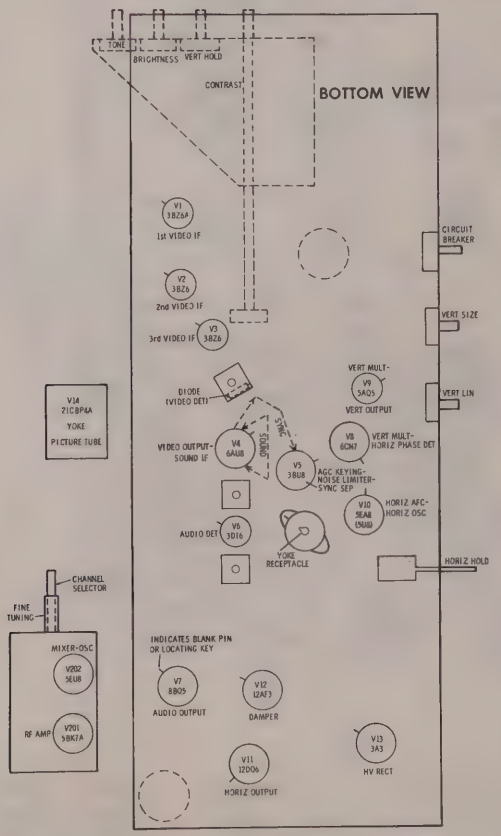
TS-556, Y, VTS-556, Y

MOTOROLA CHASSIS

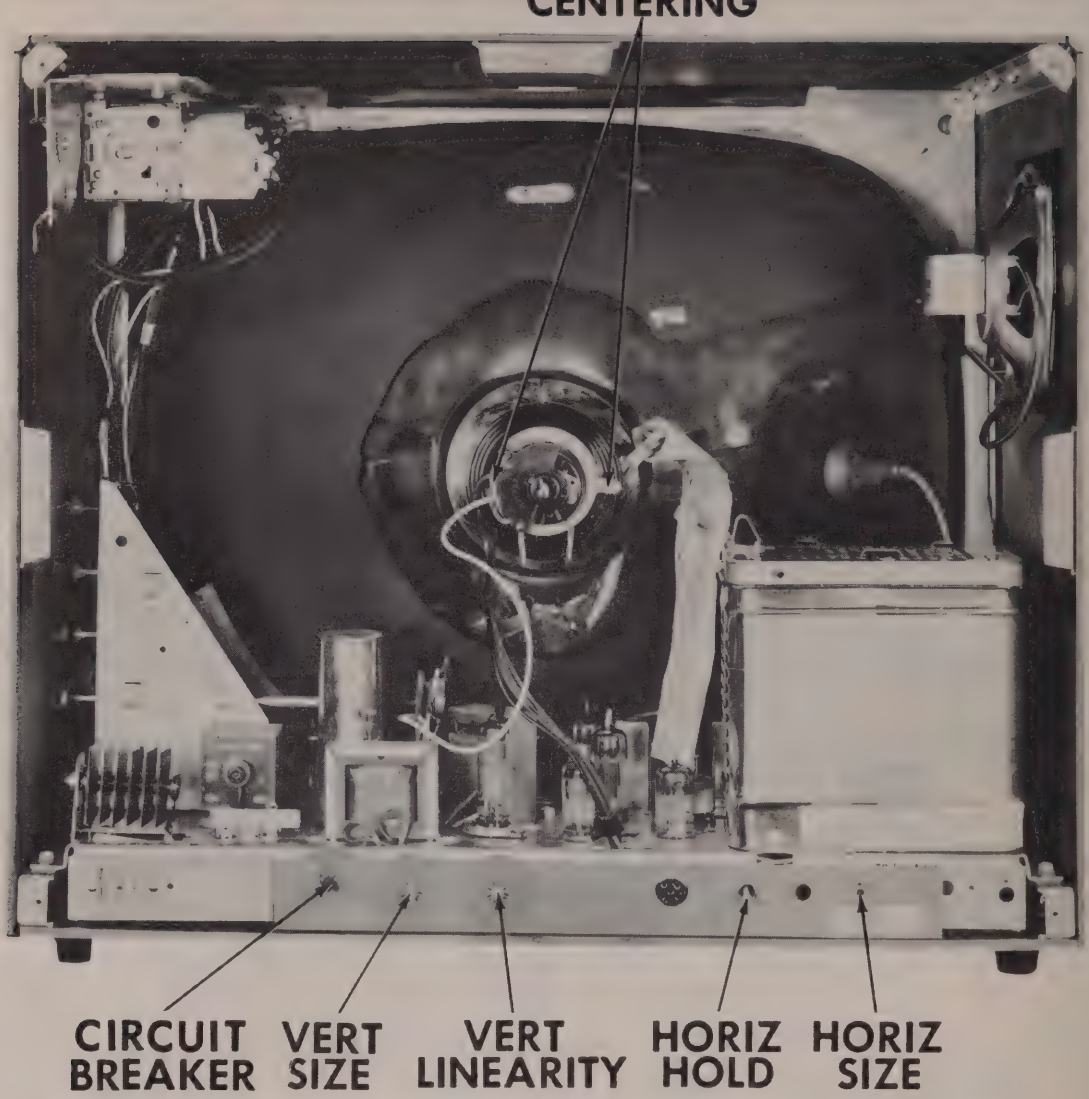
# RESISTANCE MEASUREMENTS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 3BZ6A | 650K | 47Ω | 13Ω | 12Ω | ▲ 220Ω | ▲220Ω | 0Ω | | | |
| V2 | 3BZ6 | 60K | ▲15Ω | 12Ω | 11Ω | †220Ω | †220Ω | INF | | | |
| V3 | 3BZ6 | 1000Ω | 120Ω | 10Ω | 11Ω | †6900Ω | †27K | 0Ω | | | |
| V4 | 6AU8 | 0Ω | 100K | †42K | 9Ω | 10Ω | 47Ω | 3900Ω | †15K | †6500Ω | |
| V5 | 3BU8 | †4700Ω | †0Ω | 2.8meg | 5.5Ω | 4.5Ω | †35K | †220K | †78K | †8.7meg | |
| V6 | 3DT6 | 3.4Ω | 560Ω | 2Ω | 3Ω | †390K | †15K | 640K | | | |
| V7 | 8BQ5 | 0Ω | 0Ω | 180Ω | 13Ω | 15Ω | NC | †840Ω | NC | †470Ω | |
| V8 | 6CN7 | 1200Ω | 940K | 470K | 6Ω | 6Ω | 0Ω | ● 1.7meg | ●†1.8meg | 5.5Ω | |
| V9 | 5AQ5 | ●1.5meg | 0Ω | 7.5Ω | 9Ω | †610Ω | †150Ω | ● 1.5meg | | | |
| V10 | 5EA8 | †11K | †2.7meg | †11K | 3Ω | 4.5Ω | †47K | 0Ω | 760Ω | 5.8meg | |
| V11 | 12DQ6 | NC | 17.5Ω | NC | ● †9500Ω | 1meg | NC | 15Ω | 18Ω | TOP CAP †11.5Ω | |
| V12 | 12AF3 | NC | †2.7Ω | NC | 20Ω | 18Ω | NC | NC | NC | †2.7Ω | TOP CAP ¶4.5meg |
| V13 | 3A3 | PINS 1 THRU 8 HAVE INFINITE RESISTANCE | | | | | | | | TOP CAP † 255Ω | |
| V14 | 21CBP4A | 7.5Ω | 78K | Pin 6 †500K | Pin 10 † 500K | Pin 11 270K | Pin 12 6Ω | | | | |
| V201 | 5BK7A | †1000Ω | INF | INF | 0Ω | 1Ω | INF | 3.3meg | 0Ω | 0Ω | |
| V202 | 5EU8 | †10K | 15K | †12K | 1Ω | 2Ω | 0Ω | 100K | 0Ω | †57K | |
| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 | |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM 255V SOURCE.
† MEASURED FROM CAP OF V12.
NC NO CONNECTION.




# TUBE PLACEMENT CHART




CABINET—REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Hold clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

Adjust the Horizontal Size for a picture SLIGHTLY wider than necessary to fill the picture mask.

PHOTOFACT* Folder

EIA

# OLYMPIC MODELS KY147, U, TY134, U (Ch. HY, HYU)

## IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

OLYMPIC MODELS KY147, U, TY134, U (Ch. HY, HYU)

MODEL TY-134 (Ch. HY)

OLYMPIC MODELS KY147, U, TY134, U (Ch. HY, HYU)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PHOTOFACT* Folder

# OLYMPIC MODELS KY147, U, TY134, U (Ch. HY, HYU)

OLYMPIC MODELS KY147, U, TY134, U (Ch. HY, HYU)

## DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL TY-134

1. Remove 7 push-on type knobs from the front.
2. Remove 2 wood screws holding rear cover. Remove the rear cover.
3. Remove speaker leads, HV lead, picture tube socket, yoke plug, and picture tube mounting bracket ground wire.
4. Remove 3 chassis bolts from bottom and 1 from back of cabinet.
5. Remove chassis.

MODEL TY-134(Ch. HY)

| | | | |
|---|---|---|---|
| TRADE NAME | Olympic | MODELS | CHASSIS |
| | | KY-147, TY-134 ..... | HY |
| | | KY-147U, TY-134U ..... | HYU |
| MANUFACTURER | Olympic Radio & Television Inc., 34-01 38th Avenue, Long Island City 1, N. Y. | | |
| TYPE SET | Television Receiver | | |
| TUBES | VHF-Fourteen, UHF-Fifteen | | |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycle | RATING 135 Watts, 1.28 Amp. @ 117 Volts AC | |
| TUNING RANGE | Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier) | | |

## SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 2 push-on type knobs from the front. Remove 5 screws holding trim. Tilt glass out and remove.

FUSE

One fuse is used for horizontal sweep circuit protection. (For location, see "Tube Placement Chart".)

One fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of a Local-Distant switch. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by the position of a strap on the base of the picture tube.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency slug. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Size trimmer. (For location, see "Tube Placement Chart".)

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Sound Clarifier for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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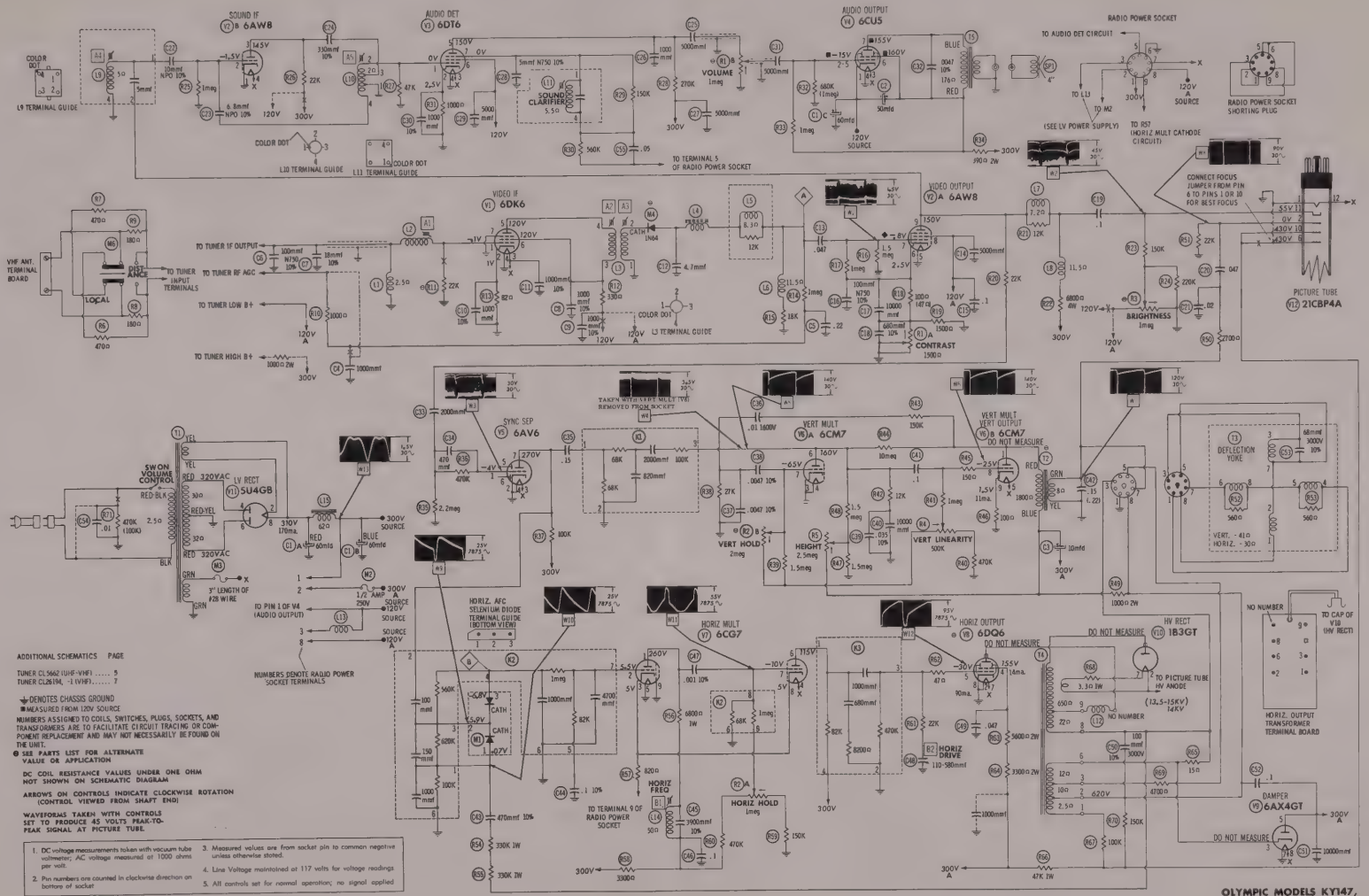
JA607



SET 464 FOLDER 2


SOUND IF V2B 6AW8
AUDIO DET V3 6DT6
AUDIO OUTPUT V4 6CU5
RADIO POWER SOCKET
TO AUDIO DET CIRCUIT
COLOR DOT
L9 TERMINAL GUIDE
L10 TERMINAL GUIDE
L11 TERMINAL GUIDE
SOUND CLARIFIER
VOLUME 1meg
TO TERMINAL 5 OF RADIO POWER SOCKET
TO L13
TO M2
120V A SOURCE
RADIO POWER SOCKET SHORTING PLUG
(SEE LV POWER SUPPLY)
TO R57 (HORIZ MULT CATHODE CIRCUIT)
VIDEO IF V1 6DK6
VIDEO OUTPUT V2A 6AW8
CONNECT FOCUS JUMPER FROM PIN 6 TO PINS 1 OR 10 FOR BEST FOCUS
PICTURE TUBE V12 21CBP4A
VHF ANT. TERMINAL BOARD
DISTANCE
LOCAL
TO TUNER IF OUTPUT
TO TUNER INPUT TERMINALS
TO TUNER IF AGC
TO TUNER LOW B+
TO TUNER HIGH B+
L3 TERMINAL GUIDE
CONTRAST 1500Ω
BRIGHTNESS 1meg
SYNC SEP V5 6AV6
VERT MULT V6A 6CM7
VERT MULT VERT OUTPUT V6B 6CM7
DO NOT MEASURE
TAKEN WITH CRT MULT (V6) REMOVED FROM SOCKET
DEFLECTION YOKE
VERT. - 41Ω
HORIZ. - 30Ω
SW ON VOLUME CONTROL
LV RECT V11 5U4GB
VERT HOLD 2meg
HEIGHT 2.5meg
1.5meg
VERT LINEARITY 500K
310V 170ma.
300V SOURCE
120V SOURCE
3" LENGTH OF #28 WIRE
TO PIN 1 OF V4 (AUDIO OUTPUT)
1/2 AMP 250V
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE (BOTTOM VIEW)
HORIZ MULT V7 6CG7
HORIZ OUTPUT V8 6DQ6
HV RECT V10 1B3GT
TO PICTURE TUBE HV ANODE
(12.5-15KV) 14KV
NO NUMBER
TO CAP OF V10 (HV RECT)
HORIZ. OUTPUT TRANSFORMER TERMINAL BOARD
HORIZ DRIVE 110-580meg
HORIZ FREQ 1meg
HORIZ HOLD 1meg
TO TERMINAL 9 OF RADIO POWER SOCKET
DAMPER V9 6AX4GT
NUMBERS DENOTE RADIO POWER SOCKET TERMINALS
ADDITIONAL SCHEMATICS PAGE
TUNER CL5662 (UHF-VHF) ..... 5
TUNER CL6194, -1 (VHF)..... 7
⏚ DENOTES CHASSIS GROUND
■ MEASURED FROM 120V SOURCE
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 45 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied
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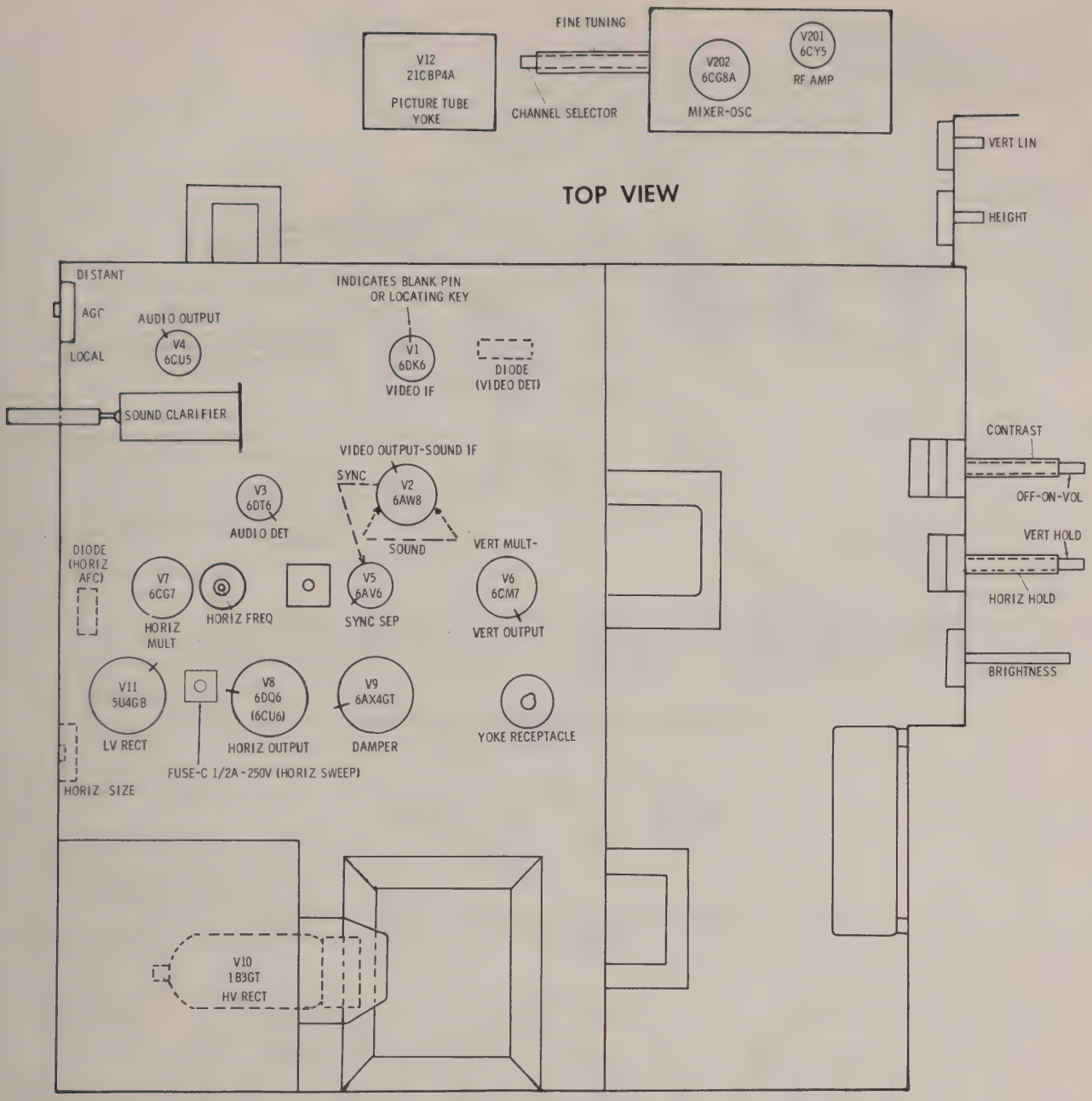
OLYMPIC MODELS KY147, Y, TY134, U (Ch. HY, HYU)

# TUBE PLACEMENT CHART




# TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

**POWER SUPPLY FAILURE**
No raster, no sound V11

**SWEEP FAILURE**
No raster, has sound V7, V8, V9, V10, V12, V11
No vertical deflection V6
Poor vert. linearity or foldover V6
Poor horiz. linearity or foldover V7, V8, V9
Narrow picture V11, V7, V8, V9
Vert. off freq. V6
Horiz. off freq. Diode (Horiz. AFC), V7

**LOSS OF PICTURE OR SOUND**
No pic, no sound, has raster V1, Diode (Video Det.)
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V2, V12
Has pic, no sound V2, V3, V4

**SYNC FAILURE**
No vert. sync V6
No horiz. sync V7
No vert. or horiz. sync V5

# ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: Mixer Plate Coil..... GENERAL CEMENT # 9296, 9297
WALSCO #2546, 2547
A1, A2, A3, A4..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

VIDEO IF ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

| | DUMMY ANTENNA | SWEEP GENERATOR COUPLING | SWEEP GENERATOR FREQUENCY | MARKER GENERATOR FREQUENCY | CHANNEL | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .05mfd | High side to ungrounded tube shield floating over Mixer-Osc. (V202). Low side to chassis. | 44.0MC (10MC Swp) | 43.25MC 45.75MC | Any non-interfering channel | Vert. Amp. thru detector (Fig. 1) to pin 5 (plate) of Video IF Amp. Low side to chassis. | A1 & Mixer Plate Coil | Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. |
| 2. | " | High side to pin 1 (grid) of Video IF Amp. Low side to chassis. | " | 43.25MC 44.5MC 45.75MC | " | Vert. Amp. thru 10K to point (A). Low side to chassis. (Across Video Det. load) | A2, A3 | Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. |
| 3. | " | High side to ungrounded tube shield floating over Mixer-Osc. (V202). Low side to chassis. | " | " | " | " | | Check for response similar to Fig. 4. If necessary, retouch Mixer Plate Coil, and A1 thru A3. |

SOUND IF ALIGNMENT

Turn the set on and tune in a strong TV signal. Adjust Sound Clarifier for maximum volume. Disconnect the antenna and if necessary, insert an attenuator in series with the antenna to provide a weak signal. Adjust A4 and A5 for maximum volume. (A weak signal is necessary to make the peaks distinguishable). Reconnect antenna directly for a strong signal and retouch Sound Clarifier for maximum undistorted sound.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGES 6 & 14

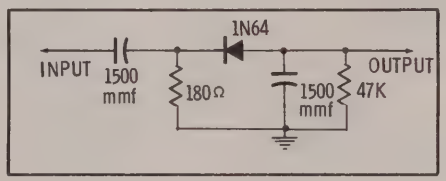



FIG. 1

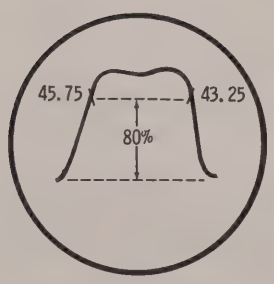



FIG. 2

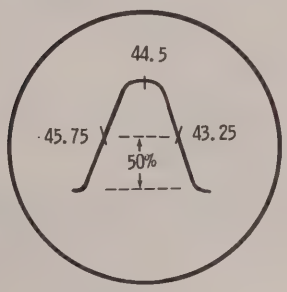



FIG. 3

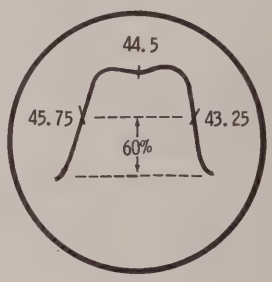
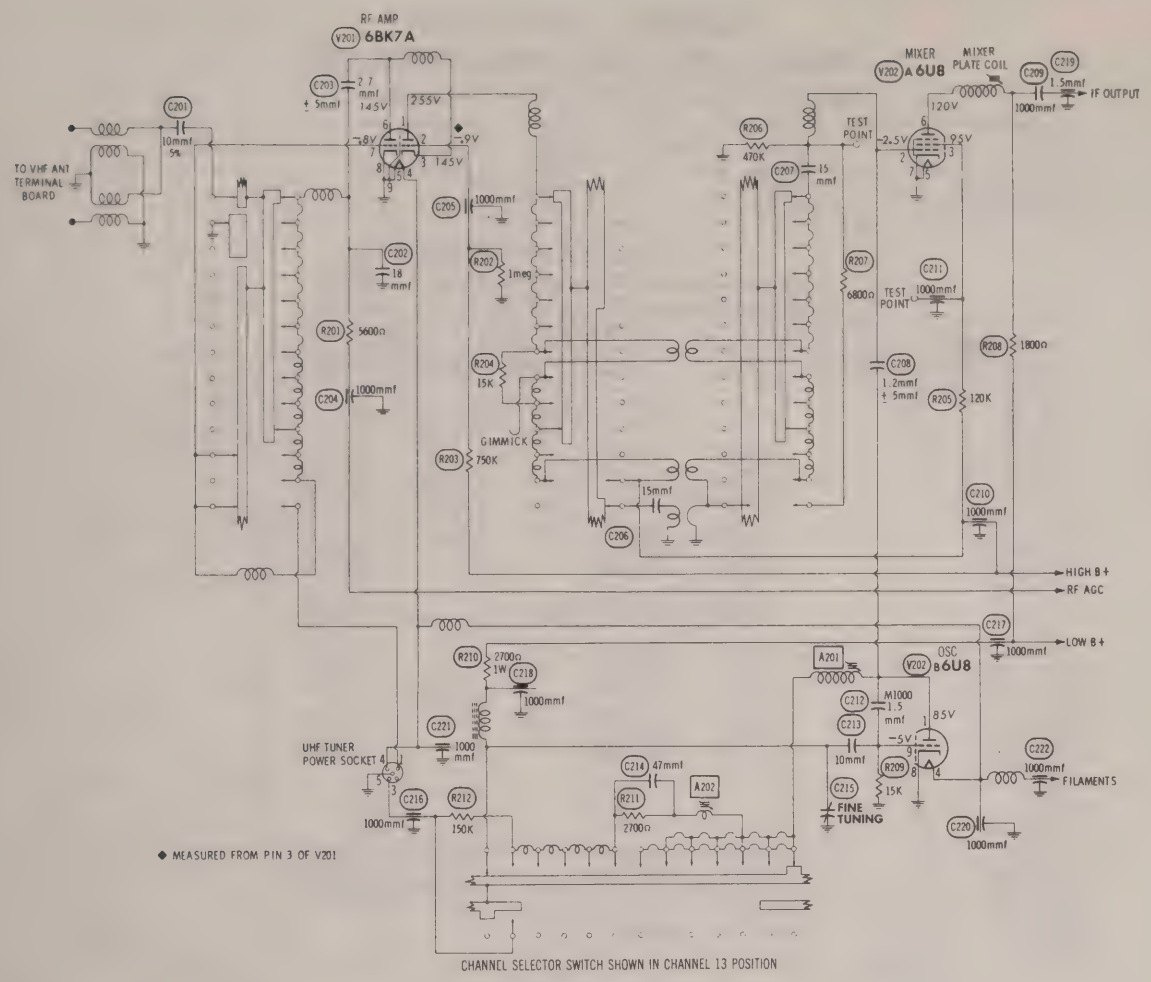



FIG. 4

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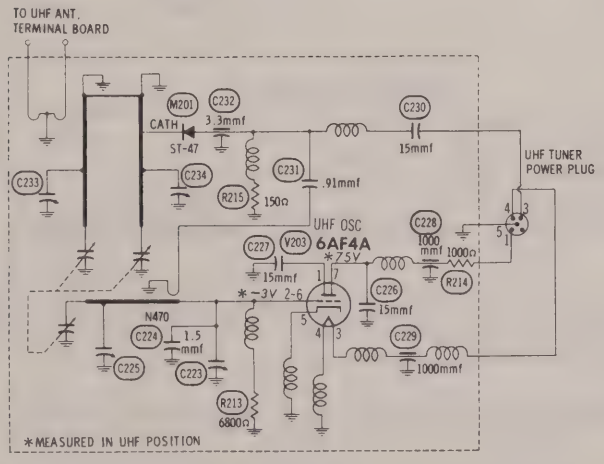
## VHF TUNER WITH UHF PROVISIONS CL5662

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## UHF TUNER CL5825

# TUNER CL5662–CL5825
# PARTS LIST AND DESCRIPTIONS
## TUBES (GENERAL ELECTRIC, SYLVANIA)

| ITEM No. | USE | TYPE | NOTES |
|---|---|---|---|
| V201 | RF Amp. | 6BK7B | |
| V202 | Mixer-Osc. | 6U8 | |
| V203 | UHF Osc. | 6AF4A | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | OLYMPIC PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C201 | 10 | | | | TCZ-10 | | | | 5% |
| C202 | 18 | | | DI 18 | DD-180 | L10QI8 | UC-5418 | 5GA-QI8 | |
| C203 | 2.7 | | | | | | | | ±.5mmf |
| C204 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C205 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C206 | 15 | | | BPD-000015 | DD-150 | L10QI5 | UC-5415 | 5GA-QI5 | |
| C207 | 15 | | | BPD-000015 | DD-150 | L10QI5 | UC-5415 | 5GA-QI5 | |
| C208 | 1.2 | | | | | | | | ±.5mmf |
| C209 | 1000 | | | BPD-001 | DD-102 | BYA8DI | DC521 | 5HK-DI | |
| C210 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C211 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C212 | 1.5 | | | | | | | | N1000 |
| C213 | 10 | | | BPD-00001 | DD-100 | L10QI | UC-541 | 5GA-QI | |
| C214 | 47 | | | BPD-000047 | DD-470 | L10Q47 | UC-5447 | 5GA-Q47 | |
| C215 | | | | | | | | | |
| C216 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C217 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C218 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C219 | 1.5 | | | | | | | | |
| C220 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C221 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C222 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C223 | | | | | | | | | |
| C224 | 1.5 | | | | | | | | N470 |
| C225 | | | | | | | | | |
| C226 | 15 | | | | | | | | |
| C227 | 15 | | | | | | | | |
| C228 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C229 | 1000 | | | EF-001 | MFT-1000 | | | 503C-DI | |
| C230 | 15 | | | BPD-000015 | DD-150 | L10QI5 | UC-5415 | 5GA-QI5 | |
| C231 | .91 | | | | | | | | |
| C232 | 3.3 | | | | | | | | |
| C233 | | | | | | | | | |
| C234 | | | | | | | | | |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | | OLYMPIC PART No. | NOTES |
|---|---|---|---|---|
| | OHMS | WATT | | |
| R201 | 5600Ω | | | |
| R202 | 1meg | | | |
| R203 | 750K | | | |
| R204 | 15K | | | |
| R205 | 120K | | | |
| R206 | 470K | | | |
| R207 | 6800Ω | | | |
| R208 | 1800Ω | | | |

| ITEM No. | RATING | | OLYMPIC PART No. | NOTES |
|---|---|---|---|---|
| | OHMS | WATT | | |
| R209 | 15K | | | |
| R210 | 2700Ω | 1 | | |
| R211 | 2700Ω | | | |
| R212 | 150K | | | |
| R213 | 6800Ω | | | |
| R214 | 1000Ω | | | |
| R215 | 150Ω | | | |

## CRYSTAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA | | | NOTES |
|---|---|---|---|---|---|
| | | OLYMPIC PART No. | CBS PART No. | SYLVANIA PART No. | |
| M201 | ST-47 | | 1N82A | 1N82A | UHF Mixer (Clip-in) |

# TUNER ALIGNMENT INSTRUCTIONS

TUNER #CL5662

VHF OSCILLATOR ALIGNMENT

Set the fine tuning to the center of its range (flat of fine tuning shaft is at right angles to top of tuner). Set the Channel Selector to the highest high band channel (13-7) operating in the area. Adjust the high band oscillator adjustment slug (A201) for best picture and sound. Switch Channel Selector to the highest low band channel (6-2) operating in the area and adjust the low band oscillator adjustment(A202) for best picture and sound. Recheck high band adjustment.

VHF RF AND MIXER ALIGNMENT

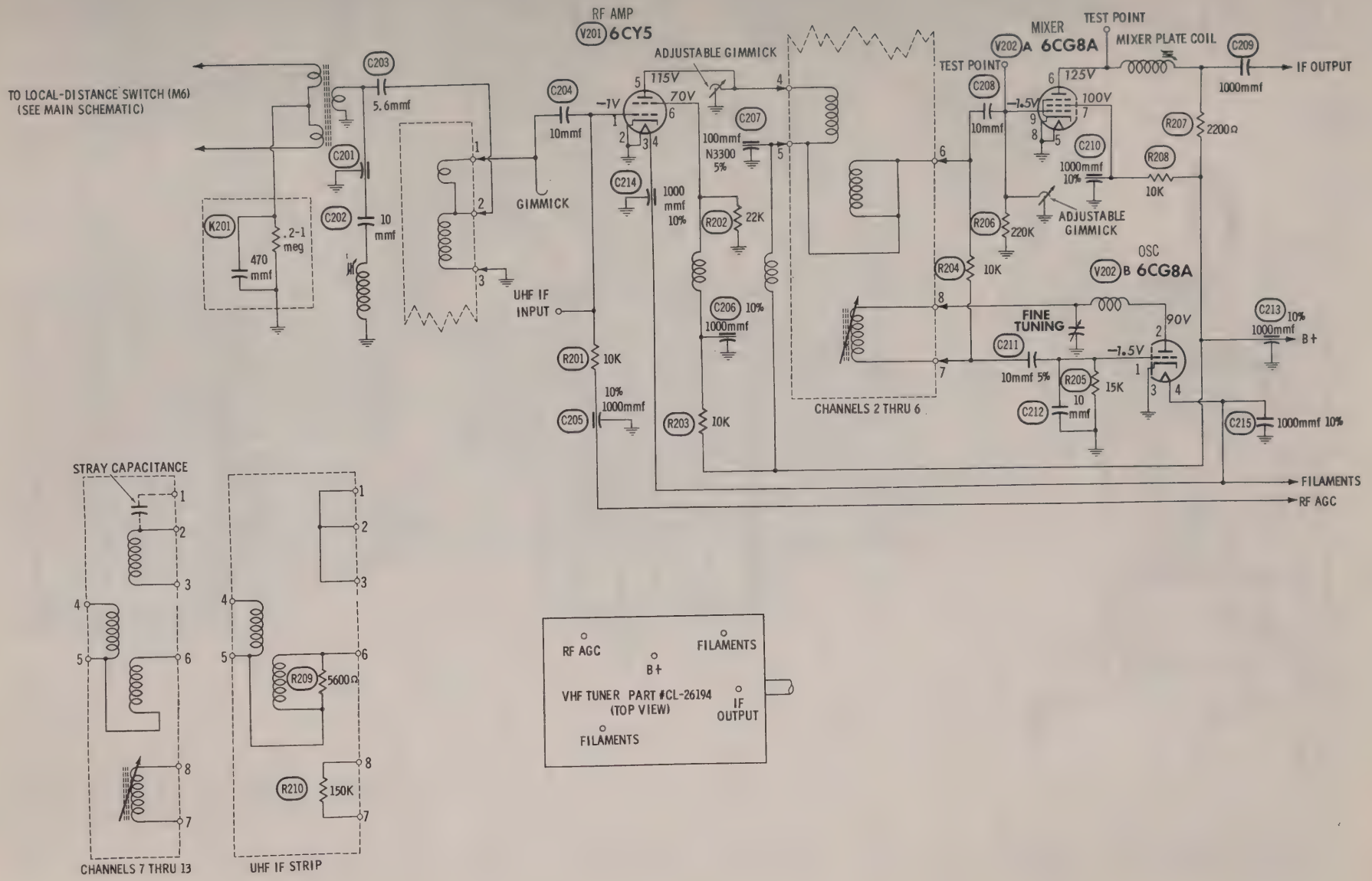
This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

UHF TUNER DIAL ALIGNMENT

Turn the VHF tuner to UHF position and turn the fine tuning (UHF tuning) fully counterclockwise. Remove the VHF Channel Selector and Fine Tuning knobs and the UHF dial, but do not turn shaft. Replace the UHF dial so that the number 80 will be visible thru the UHF window in the VHF Channel Selector knob. Replace the Fine Tuning and VHF Channel Selector knobs.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

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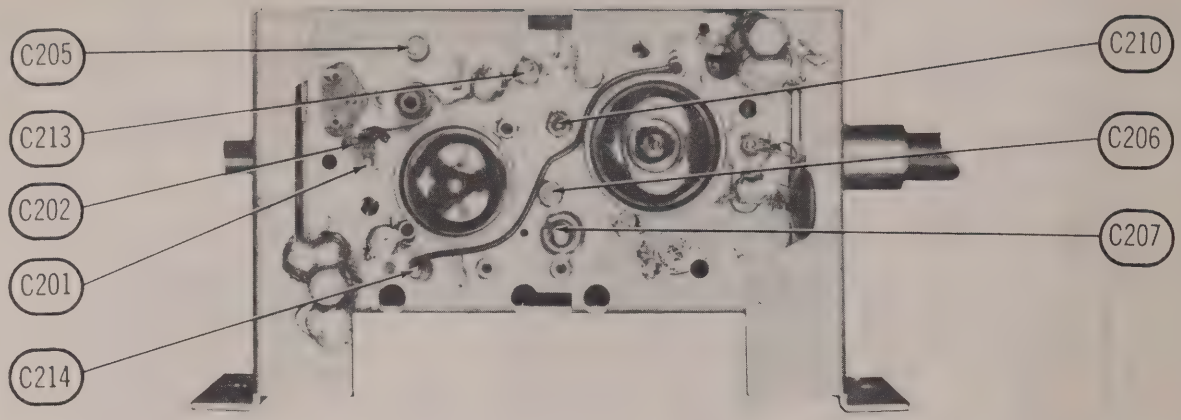
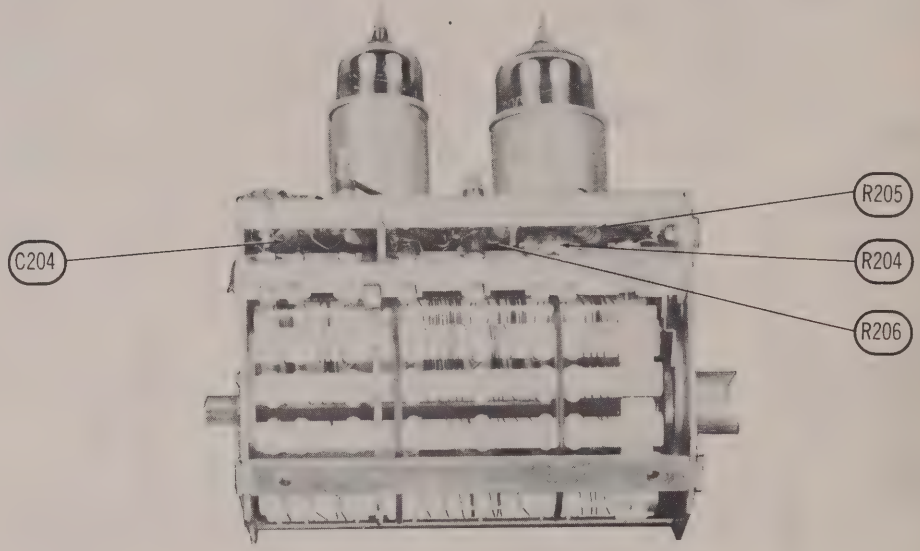
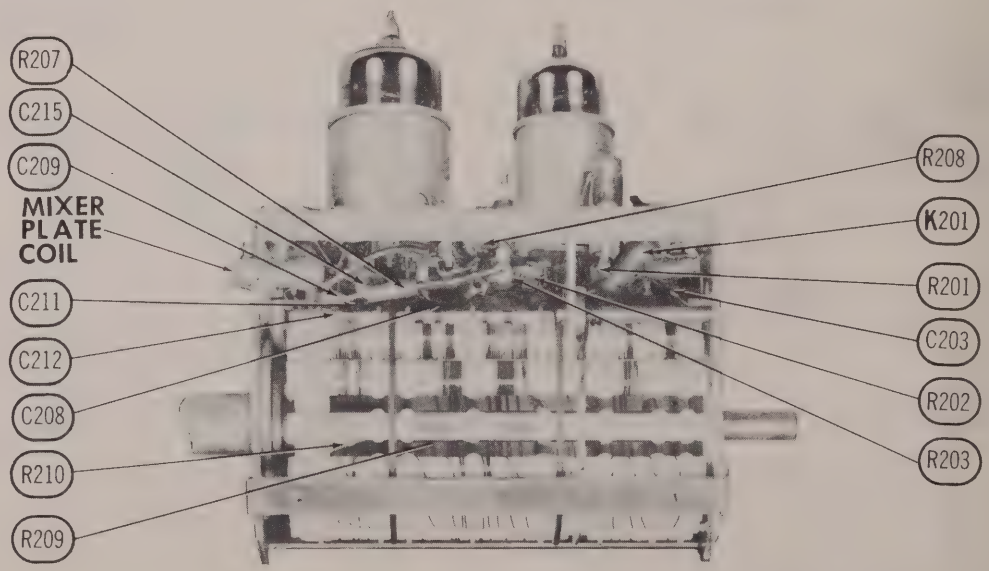
# VHF TUNER CL26194, -1

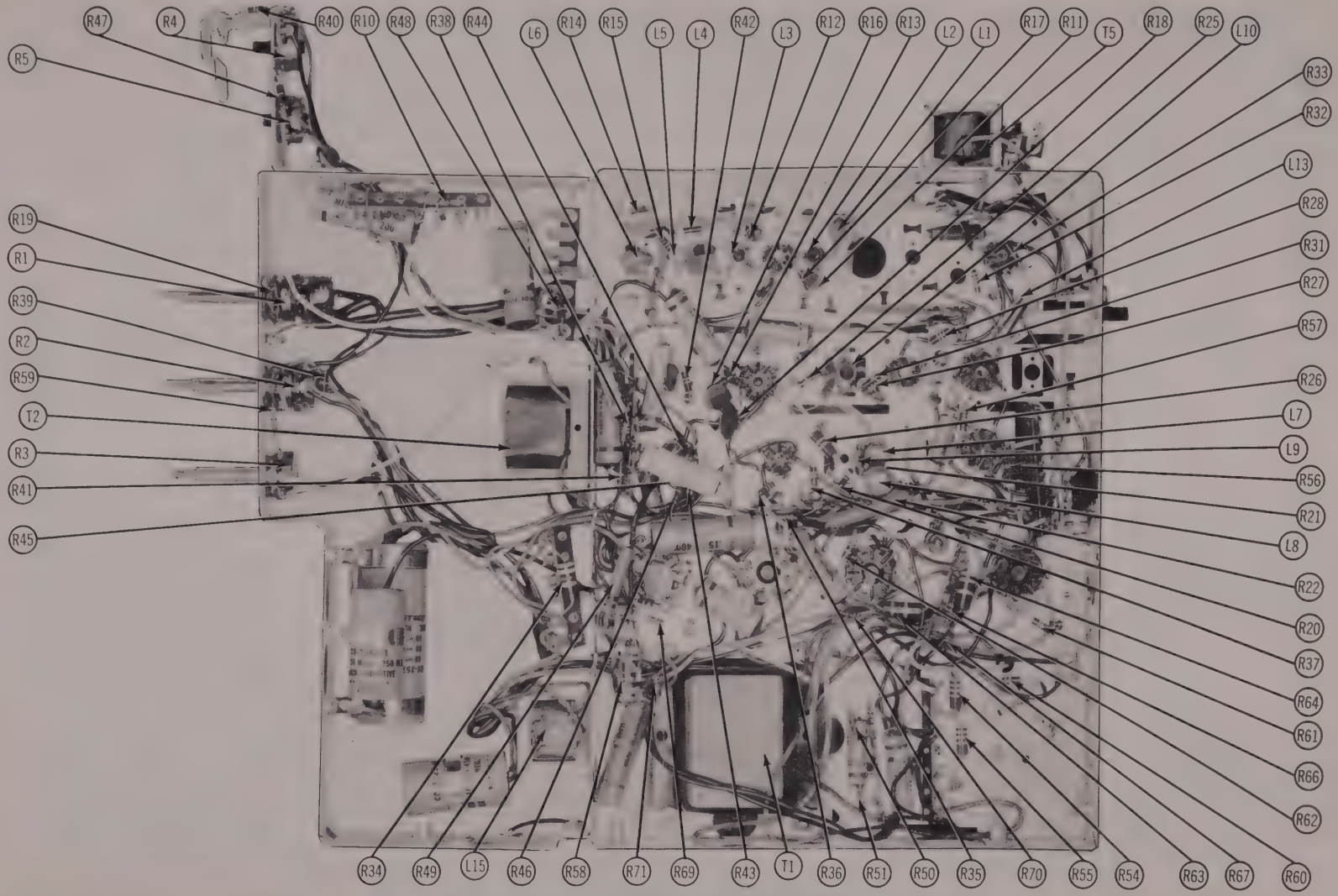
OLYMPIC MODELS KY147, U,
TY134, U (Ch. HY, HYU)




**TUNER CL26194**




CHASSIS-BOTTOM VIEW-RESISTOR INDUCTOR IDENT

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No | CBS | GENERAL ELECTRIC | RAYTHEON | SYLVANIA |
|---|---|---|---|---|
| | USE | TYPE | USE | TYPE |
| V1 | Video IF Amp | 6DK6 | | |
| V2 | Video Output-Sound IF Amp | 6AW8 | | |
| V3 | Audio Det | 6DT6 | | |
| V4 | Audio Output | 6CU5 | | |
| V5 | Sync Sep | 6AV6 | | |
| V6 | Vert Mult - Vert Output | 6CM7 | | |
| V7 | Horiz. Mult | | | 6CG7 |
| V8 | Horiz. Output | | | 6DQ6 (6CU6)* |
| V9 | Damper | | | 6AX4GT |
| V10 | HV Rect | | | 1B3GT |
| V11 | L-V Rect | | | 5U4GB |

* Alternate

## PICTURE TUBE

| ITEM No | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|
| | OLYMPIC PART No | GENERAL ELECTRIC PART No | RCA PART No | RAYTHEON PART No | SYLVANIA PART No | |
| V12 | 21CBP4A | 21CBP4A ① | 21CBP4A | 21CBP4A | 21CBP4A/ ② | ① Aluminized<br>② "Silver Screen 65" |

## ELECTROLYTIC CAPACITORS

| ITEM No | RATING | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP | VOLT | OLYMPIC PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | FYRAMID PART No. | SPRAGUE PART No. | | |
| C1A | 60 | 350 | CO83794 | PR4-450 | {BRT-0235<br>BR8025 | WT458 | {CDB-Q4423<br>TD-50-250 | TVAS-3636* | | |
| B | 60 | 350 | | | | | | | | |
| C | 60 | 200 | | | | | | | | |
| C2 | 50 | 250 | CO3088-3 | PR8585 | BR5085 | TC59 | TD-50-450 | TVA-1713 | | |
| C3 | 10 | 450 | CO4032-3 | PR8720 | BR1045 | TC72 | TD-10-450 | TVA-1706 | | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C4 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C5 | .22 200V | | P288N-22 | | CUB32P22 | 3DP-4-224 | GEM-2022 | 3TM-P22 |
| C6 | 100 N750 10% | | N750-DI 100 | DTN-100 | CI0TIU | CCTN-101 | CN7-310 | 10TCU-T10 |
| C7 | 18 10% | | DI-18 | DD-180 | LI0TI8 | CCD-180 | GP418 | 10TS-Q18 |
| C8 | 1000 10% | | DI-1000 | DD-102 | PM6DI | CCS-102 | GP210 | 10TS-D10 |
| C9 | 1000 10% | | DI-1000 | DD-102 | PM6DI | CCS-102 | GP210 | 10TS-D10 |
| C10 | 1000 10% | | DI-1000 | DD-102 | PM6DI | CCS-102 | GP210 | 10TS-D10 |
| C11 | 1000 10% | | DI-1000 | DD-102 | PM6DI | CCS-102 | GP210 | 10TS-D10 |
| C13 | 4.7 | | NPO-SI 4.7 | TC2-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C14 | .047 400V | | P488N-047 | DD-503 | CUB4S47 | 4DP-3-473 | GEM-4147 | 4TM-S47 |
| C15 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C15 | 1 200V | | P388N-1 | DF-104 | CUB2P1 | 3DP-3-104 | GEM-201 | 3TM-P1 |
| C16 | 100 N750 10% | | N750-DI 100 | DTN-100 | CI0TIU | CCTN-101 | CN7-310 | 10TCU-T10 |
| C17 | 10000 | | BPD-01 | | BYA10I01 | CCD-103 | B-110 | 5HK-S10 |
| C18 | 680 10% | | DI-680 | DD-681 | IR5T68 | CCS-681 | GP-368 | 10TS-T68 |
| C19 | .1 400V | | P484N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C20 | .047 400V | | P488N-047 | DD-503 | CUB4S47 | 4DP-3-473 | GEM-4147 | 4TM-S47 |
| C21 | .02 400V | | P488N-02 | | CUB4S2 | 4DP-3-203 | GEM-4122 | 4TM-S2 |
| C22 | 10 NPO 10% | | NPO-DI 10 | DTZ-10 | CI0QIC | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C23 | 6.8 NPO 10% | | NPO-DI 6.8 | DTZ-6R8 | CI0V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C24 | 330 10% | | DI-330 | DD-331 | LI0T33 | CCD-331 | GP333 | 10TS-T33 |
| C25 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C26 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C27 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C28 | 5 N750 10% | | | DTN-5 | CI0V5U | CCTN-050 | CN7-550 | 10TCU-V50 |
| C29 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C30 | 1000 10% | | DI-1000 | DD-102 | PM6DI | CCS-102 | GP210 | 10TS-D10 |
| C31 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C32 | .0047 600V 10% | | P588N-0047 | | PM6D47 | 6DP-1-472 | JL-247 | 6TM-D47 |
| C33 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C34 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C35 | .15 400V | | P488N-15 | | CUB4P15 | 4DP-4-154 | GEM-4015 | 4TM-P15 |
| C36 | .01 1600V | | P184CM-01 | DDI6-103 | DDI6I03 | 16DP-3-103 | GEM-1613 | MB-S3 |
| C37 | .0047 600V 10% | | V84C6D47-10% | | PM6D47 | 6DP-1-472 | JL-247 | 6TM-D47 |
| C38 | .0047 600V 10% | | V84C6D47-10% | | PM6D47 | 6DP-1-472 | JL-247 | 6TM-D47 |
| C39 | .035 600V 10% | #CO-O-8353K | | | | | | 6TM-S35 |
| C40 | 10000 | | BPD-01 | DD-103 | BYA10I01 | CCD-103 | B-110 | 5HK-S10 |
| C41 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C42 | .15 400V | (.22mfd-200VDC) | P488N-15 | | CUB4P15 | 4DP-4-154 | GEM-4015 | 4TM-P15 |
| C43 | 470 10% | | DI-470 | DD-471 | 5S5T47 | CCD-471 | GP347 | 10TS-T47 |
| C44 | .1 200V 10% | | V84C2P1-10% | | PM2P1 | 2DP-3-104 | GEM-201 | 2TM-P1 |
| C45 | 1900 10% | | 1464-0039 | | IRD19I | M-20B-392K | MC8493 | MB-S39 |
| C46 | .1 600V | | P688N-1 | DF-104 | CUB6P1 | 6DP-4-104 | GEM-601 | 6TM-P1 |
| C47 | 001 600V 10% | | V84C6D1-10% | | PM6D1 | 6DP-1-102 | GP210 | 6TM-D1 |
| C48 | 110-280 | #CT3838 | | | | 467 | | |
| C49 | .047 400V | | P488N-047 | DD-503 | CUB4S47 | 4DP-3-473 | GEM-4147<br>3DY-310 | 4TM-S47 |
| C50 | 100 3000V 10% | #CO3781 | | | | | B-110 | 5HK-S10 |
| C51 | 10000 | | BPD-01 | DD-103 | BYA10I01 | CCD-103 | GEM-401 | 4TM-P1 |
| C52 | 1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | 3DY-466 | |
| C53 | 68 3000V 10% | #CO4520 | | | | | | |
| C54 | .01 600V | | P688N-01 | DD-103 | CUB6I | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C55 | .05 50V | | P288N-05 | DD-503 | CUB2S5 | 1DP-2-503 | GEM-415 | 2TM-S5 |

\# Olympic Part Number. * Alternate value

## CONTROLS

| ITEM No | RATING | | REPLACEMENT DATA | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | OLYMPIC PART No | CENTRALAB PART No | CLAROSTAT PART No. | IRC PART No | MALLORY PART No | |
| R1A | 1500Ω | ½ | PT25405 | F1-7 | RTV-670 | †QJ-963 | ‡UE3853S | Contrast |
| B | 1meg | | | R2-52 | Not Reg | | | Volume, Note 1 |
| C | Switch | | | KR-1 | Not Reg. | | | Power Off-On |
| R2A | 1meg | ½ | PT5704 | F1-51 | RTV-669 | †QJ-956 | ‡UE3593 | Horiz. Hold |
| B | 2meg | | | R2-67 | Not Reg. | | | Vert. Hold, Note 2 |
| R3A | 1meg | ½ | PT5702 | B-69 | A47-1meg-S | QH-137 | U155 | Brightness, Note 2 |
| B | Shaft | | | Not Reg. | KS8-3 | Not Reg. | Not Reg. | |
| R4A | 500K | ½ | PT25790 | B-59 | B47-500K-S | BH-133 | PTA55L | Vert. Lin. |
| B | Shaft | | | Not Reg. | Not Reg. | TM4 | Not Reg. | |

## CONTROLS (cont)

| ITEM No | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | OLYMPIC PART No | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No | MALLORY PART No | |
| R5A | 2.5meg | 1 | PT5008-1 | AB-83 | B47-2.5meg-S | B11-239 | TA355L | Height |
| B | Shaft | | | AK-1 | Not Reg. | TM4 | Not Reg. | |

Note 1. Some versions may use 500K in this application.
Note 2. Some versions may use 1.5meg in this application.
† "Concentrikit" Equivalent: K-6 Kit with Base Elements & Shafts: B17-109, P13-116 (Panel) B13-137, R1-302 (Rear) 76-1 (Switch)
‡ "Concentrikit" Equivalent: K-6 Kit with Base Elements & Shafts: B11-137, P17-118 (Panel) B11-139, R1-130 (Rear) (Not available as a factory assembled unit.)
■ "STA-LOC" Equivalent: FA0S3R, RU16A, OS1500, 1S3125, U8-41.
▲ "STA-LOC" Equivalent: FA0L, RU26L, OS1500, 1S2000.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R5 | 470Ω | |
| R7 | 470Ω | |
| R8 | 180Ω | |
| R9 | 150Ω | |
| R10 | 1000Ω | |
| R11 | 22K | Note 1 |
| R12 | 330Ω | |
| R13 | 82Ω | |
| R14 | 1meg | |
| R15 | 18K | |
| R16 | 1.5meg | |
| R17 | 1meg | |
| R18 | 100Ω | (47Ω)* |
| R19 | 1500Ω | |
| R20 | 22K | |
| R21 | 18K | |
| R22 | 6800Ω 4W | #RE5533 |
| R23 | 150K | |
| R24 | 220K | |
| R25 | 1meg | |
| R26 | 22K | |
| R27 | 47K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R28 | 270K | |
| R29 | 150K | |
| R30 | 560K | |
| R31 | 1000Ω | |
| R32 | 680K | (1meg)* |
| R33 | 1meg | |
| R34 | 390Ω 2W | |
| R35 | 2.2meg | |
| R36 | 470K | |
| R37 | 100K | |
| R38 | 27K | |
| R39 | 1.5meg | |
| R40 | 470K | |
| R41 | 1meg | |
| R42 | 12K | |
| R43 | 150K | |
| R44 | 10meg | |
| R45 | 150Ω | |
| R46 | 100Ω | |
| R47 | 1.5meg | |
| R48 | 1.5meg | |
| R49 | 1000Ω 2W | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R50 | 2700Ω | |
| R51 | 22K | |
| R52 | 560Ω | |
| R53 | 560Ω | |
| R54 | 330K 1W | |
| R55 | 330K 1W | |
| R56 | 6800Ω 1W | |
| R57 | 820Ω | |
| R58 | 3300Ω | |
| R59 | 150K | |
| R60 | 470K | |
| R61 | 22K | |
| R62 | 47Ω | |
| R63 | 5600Ω 2W | |
| R64 | 3300Ω 2W | |
| R65 | 15Ω | |
| R66 | 47K 1W | |
| R67 | 100K | |
| R68 | 3.3Ω 1W | |
| R69 | 470Ω | |
| R70 | 150K | |
| R71 | 470K | (100K 1W)* |

\# Olympic Part Number * Alternate value. Note 1. Not used in some versions.

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | OLYMPIC PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Vert Integrator | 820mmf, 2000mmf, 68K, 68K | PC26048 | |
| K2 | Horiz. AFC & Mult. Network | 100K<br>100mmf, 150mmf, 1000mmf,<br>1000mmf, 4700mmf, 68K, 82K,<br>100K, 560K, 820K, 1meg, 1meg | PC25716 | |
| K3 | Horiz Coupling | 680mmf, 1000mmf, 8200Ω, 82K, 470K | PC25714 | |

## COILS (RF-IF)

| ITEM No | USE | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | OLYMPIC PART No. | Gramer PART No | Meissner PART No | Merit PART No | Miller PART No | Ram PART No | |
| L1 | RF Choke | CL1535 | 19-3036 | 19-3036 | TV-180 | 6176 | VP-1 | 36ub |
| L2 | 1st Video IF | CL4763 | 17-4534 | 17-4534 | TV-131 | | VP-4 | |
| L3 | 2nd Video IF | CL5870 | | | | | | 1. Tuh |
| L4 | Resonant Choke | CK4225 | | | | | | 180uh ① |
| L5 | Series Peaking Coil | CL2356 | 19-3180 * | 19-3180 * | TV-184 * | 6180 * | VP-5 * | 500uh |
| L6 | Shunt Peaking Coil | CL2814 | 19-3500 | 19-3500 | TV-203 | 6174 | VP-8 | 240uh |
| L7 | Series Peaking Coil | CL25766 | 19-3250 | 19-3250 | TV-185 | 8181 | VP-6 | 500uh |
| L8 | Shunt Peaking Coil | CL2814 | 19-3500 | 19-3500 | TV-203 | 6174 | VP-8 | |
| L9 | 1st Sound IF | CL25518 | | | | | | Tap ③, 40, 1, 2u |
| L10 | 2nd Sound IF | CL4021 | 17-3412 | 17-3412 | | | | |
| L11 | Quadrature Coil | CL2303-1 | | | | | 8D-5 | 8. Sub |
| L12 | Resonant Choke | CK4415 | | | | | | 6. Sub |
| L13 | Resonant Choke | CK4415 | | | | | | |

* Parallel with 12K resistor ① Wound on 12K resistor.

## TRANSFORMER (HORIZ. OSC.)

| ITEM No. | DC RES. | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | OLYMPIC PART No. | Halldorson PART No. | Merit PART No. | Miller PART No. | Ram PART No. | Thordarson PART No | |
| L14 | 80Ω | | CL5464-1 | | | | | | Horiz. Stab. |

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE @ CURRENT 1000 ~(.) | OLYMPIC PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No |
| L15 | .170A | 62Ω | .7 Hy. | CK4047 | 28C43 ① | | | C-2325 ① | 28C43 ① | C-24X ① |

① Drill new mounting hole.

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | OLYMPIC PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V ④<br>1.28A | 640VCT ⑤ .170A | 5V ⑥ 3A | TR4007-2 | | | | P-8172 | | S-88B ① |
| | | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | |
| | | 6.3V ⑥<br>7.6A | | | | | | | | |

① Drill new mounting holes.

## TRANSFORMERS (SWEEP CIRCUITS)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | OLYMPIC PART No | Halldorson PART No | Merit PART No | Ram PART No | Rogers PART No | Stancor PART No | Thordarson PART No | Triad PART No |
| T2 | Vert Output | TR2579IC | | | | | | | |
| T3 | Alt. Vert Output<br>Yoke-Horiz (19MH)<br>(90°)-Vert. (39MH) | TR2579I<br>CL-3600-4 | Y-16 ① | MDF-92 ① ② | Y90F19/43 ① ② | PCM2045 ① ② | DY-16A ① ② | Y-16 ① | Y-41 & NW-3 ①<br>YC-1 & CL-1 |
| | Rear Cover & Centering Device | PR5640 | | | | | | | |
| | Yoke Clamp | SP5672 | | | | | | | |
| T4 | Horiz. Output | TR-3598-5 | FLY-143* | | X51 * | FFR166 * | HO-296 * | FLY-143* | D-120 * |

① Connect same as original. ② Use original horizontal yoke damping network, if necessary.

## *HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

| | ORIGINAL TERMINAL CONNECTIONS | Halldorson Replacement Connections | Merit Replacement Connections | Ram Replacement Connections | Rogers Replacement Connections | Stancor Replacement Connections | Thordarson Replacement Connections | Triad Replacement Connections |
|---|---|---|---|---|---|---|---|---|
| | 9 | 6 | | 9 | 5 | 4 | 4 | 9 |
| | 8 | 8 | | 8 | 4 | 8 | 8 | 8 |
| | 6 | 7 | | 6 | 4 | 7 | 7 | 6 |
| | 3 | 2 | | 4 | 3 | 2 | 2 | 3 |
| | 2 | 5 | | 2 & 3 | 2 | 5 | 5 | 2 |
| | 1 | 1 | | 1 | 1 | 1 | 1 | 1 |
| Special Notes → | | ③ | | | | ③ | ③ | |

③ Filament requires two turns.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | OLYMPIC PART No. | Halldorson PART No | Merit PART No | Ram PART No | Stancor PART No. | Thordarson PART No | Triad PART No |
| T5 | 2400Ω | 3-4Ω | TR2766-1 | 24353 | A-3025 | AU-605 | A-3332 | 24853 | S-12X |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | OLYMPIC PART No | QUAM PART No | |
| SP1 | 4" | PM | 3-4Ω | SK4342 | 4A07 | |

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | OLYMPIC PART No. | FEDERAL PART No | INTERNATIONAL PART No | SARKES TARZIAN PART No | SYLVANIA PART No | |
| M1 | | RF5465 ① | K1615 ① | 1T1 ② | | | ① Dual Selenium Type.<br>② Selenium Type (2 Required) |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | OLYMPIC PART No | | LITTELFUSE PART No | | BUSS PART No | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | C | 1/2A 250V | FU28203 | FH4344 | 332.500 (C 1/2A-250V) | 346002 | C 1/2 | HC 3/10 to 1/2 |
| M3 | 3" Length of #28 Wire | | | | | | | |

## CRYSTAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|
| | | OLYMPIC PART No | CBS PART No | RAYTHEON PART No | SYLVANIA PART No | |
| M4 | 1N64 | 1N64 | 1N64 | 1N296 | 1N64 | Video Det. (Pigtail) |
| | 1N80 * | | | | | * Alternate type |

## MISCELLANEOUS

| ITEM No. | PART NAME | OLYMPIC PART No. | NOTES |
|---|---|---|---|
| M5 | Tuner | CL26194 | VHF (Includes IF Trap) Ch. HY |
| | Tuner | CL26194-1 | VHF Ch. HY |
| | Tuner | CL5652 | UHF-VHF (Includes UHF Tuner CL5825) Ch. HYU |
| M6 | Switch | SW-2966-1 | Local-Distant (DPDT Slide Type) |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

## WIRING DATA

| | |
|---|---|
| High Voltage Lead | Use BELDEN No. 8869 |
| Shielded Hook-up Wire | Use BELDEN No. 8845 (Single Conductor)<br>8738 (Two Conductor) |
| General-use Unshielded Hook-up Wire | 8530 (Solid) Available in Ten Colors<br>8524 (Stranded) Available in Ten Colors |
| Power Cord (Interlock Type) | Use BELDEN No. 8874 |
| 300Ω Tuner Input Lead | Use BELDEN No. 8225 |
| 300Ω Antenna Lead-In | Use BELDEN No. 8230 or 8276 |
| Antenna Rotor Cable | Use BELDEN No. 8494 (Flat) or 8484 (Round) - 4 Conductor<br>8485 (Round) - 5 Conductor<br>8488 (Round) - 8 Conductor |

OLYMPIC MODELS KY147, U, TY134, U (Ch. HY, HYU)

FOLDER 2

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

# TUNER
## CL26194, -1

Note: CL26194-1 same as CL26194 but does not include trap.

# PARTS LIST AND DESCRIPTIONS

## TUBES

| • CBS • GENERAL ELECTRIC • | | | • RAYTHEON • SYLVANIA • | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V201 | RF Amp. | 6CY5 | V202 | Mixer-Osc. | 6CG8A |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C201 | | | | | | | | |
| C202 | 10 | | NPO-DI 10 | DTZ-10 | C10Q10C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C203 | 5.6 | | | | | | | 10TCC-V56 |
| C204 | 10 | | NPO-DI 10 | DTZ-10 | C10Q10C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C205 | 1000 10% | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C206 | 1000 10% | | EF-001 | MFT-1000 | | CCF-102 * | CT280A | |
| C207 | 100 N3300 5% | | | | | | | |
| C208 | 10 | | NPO-DI 10 | DTZ-10 | C10Q10C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C209 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C210 | 1000 10% | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C211 | 10 5% | | NPO-DI 10 | DTZ-10 | C10Q10C | CCTO-100 | CNO-410 | 10TCC-Q10 |
| C212 | 10 | | NPO-DI 10 | DTZ-10 | C10Q10C | CCTO-10 | CNO-410 | 10TCC-Q10 |
| C213 | 1000 10% | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C214 | 1000 10% | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |
| C215 | 1000 10% | | EF-001 | MFT-1000 | | CCF-102 | CT280A | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R201 | 10K | |
| R202 | 22K | |
| R203 | 10K | |
| R204 | 10K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R205 | 15K | |
| R206 | 220K | |
| R207 | 2200Ω | |
| R208 | 10K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R209 | 5600Ω | |
| R210 | 150K | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | OLYMPIC PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K201 | Antenna Filter | 470mmf, .2-1meg | | Centralab RC-471<br>Sprague AC1-1 |

# ALIGNMENT INSTRUCTIONS

VHF OSCILLATOR ALIGNMENT

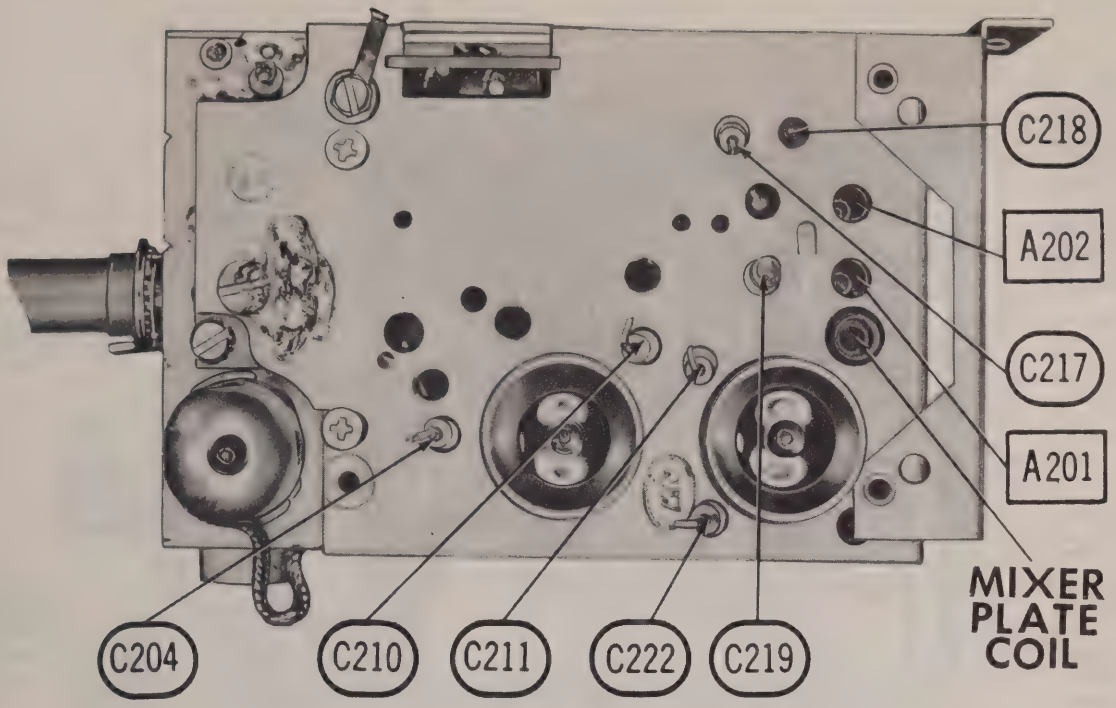
The individual channel adjustment screws are accessible one at a time, thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

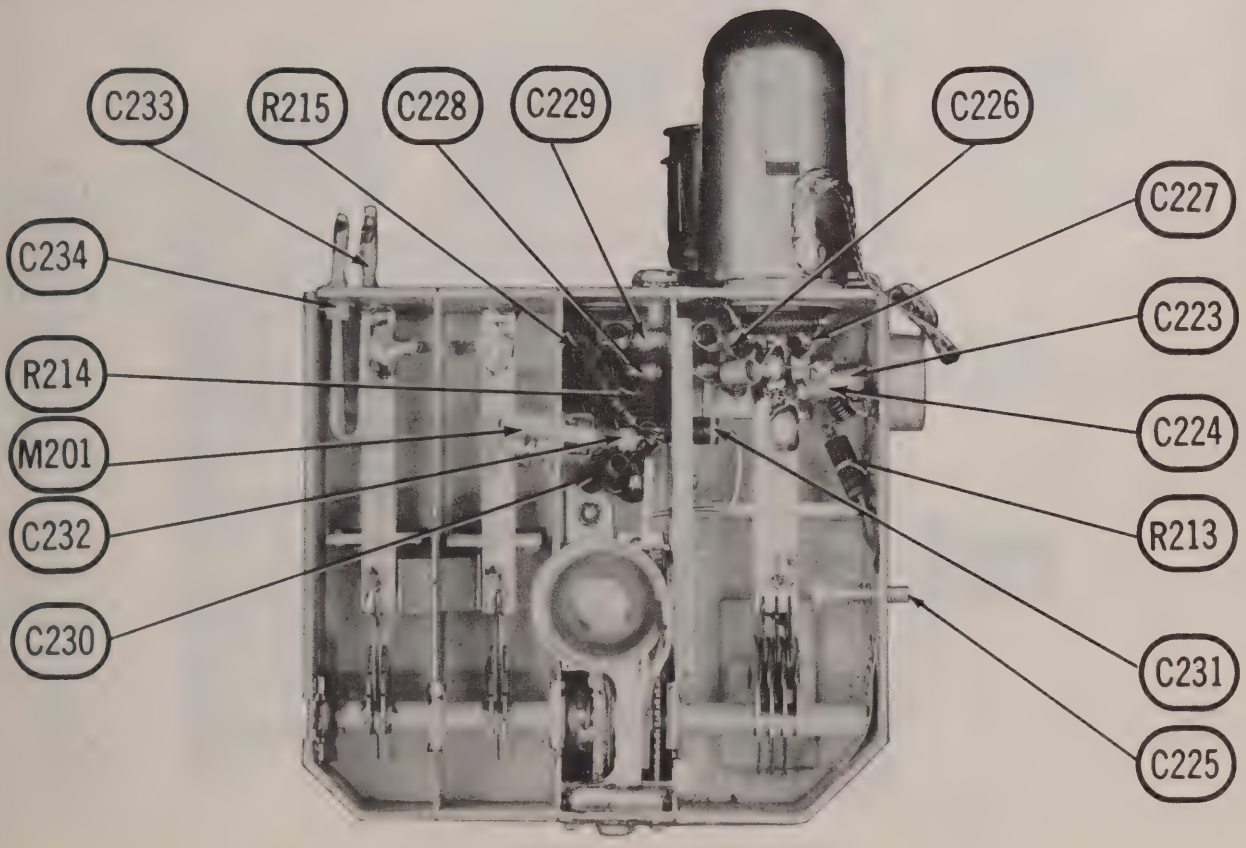
This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

UHF TUNER ALIGNMENT

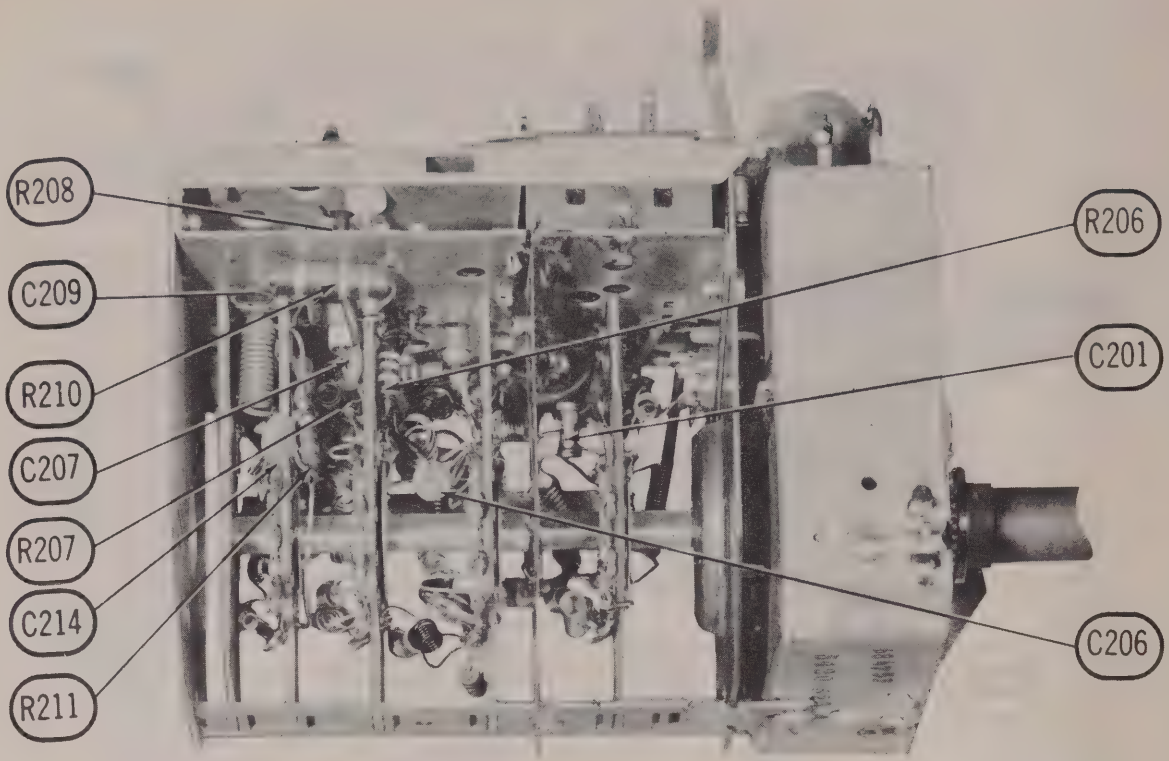
This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



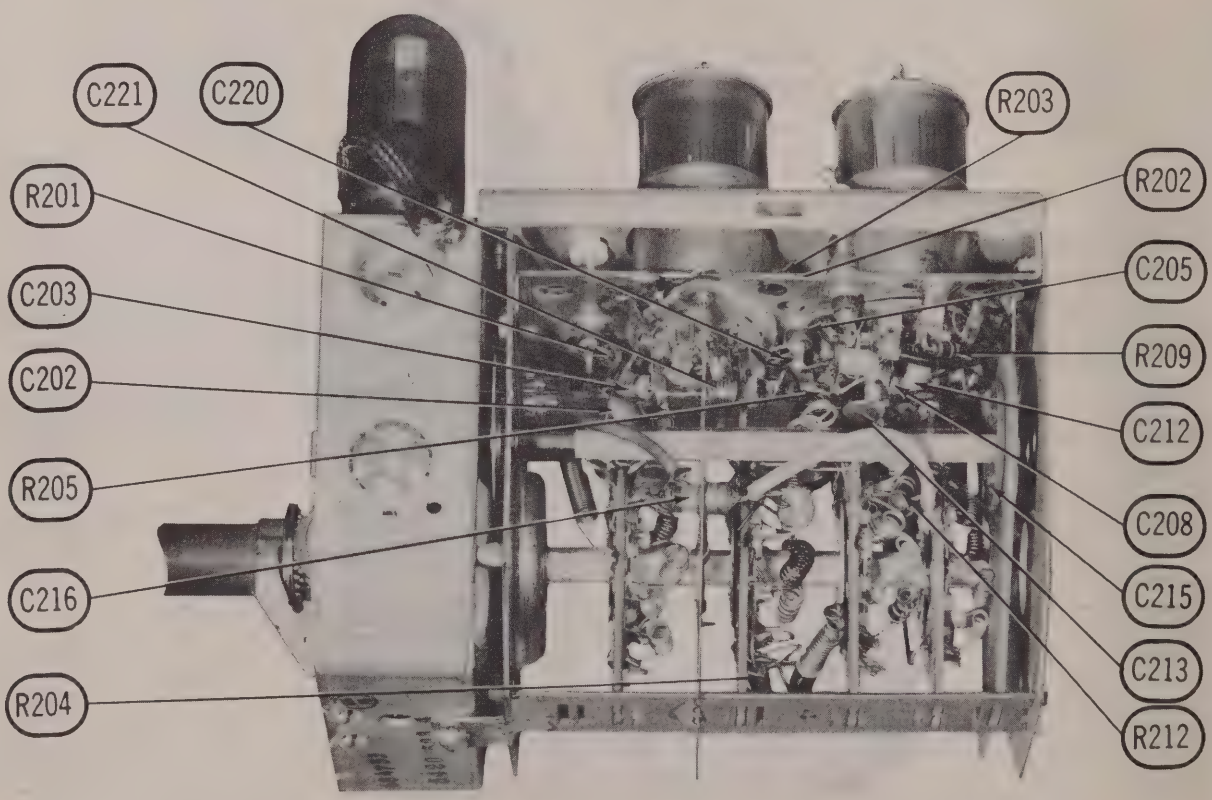

TUNER CL5662 - TOP VIEW




TUNER CL5825 - END VIEW




TUNER CL5662 - LEFT SIDE




TUNER CL5662 - RIGHT SIDE

CHASSIS TOP VIEW

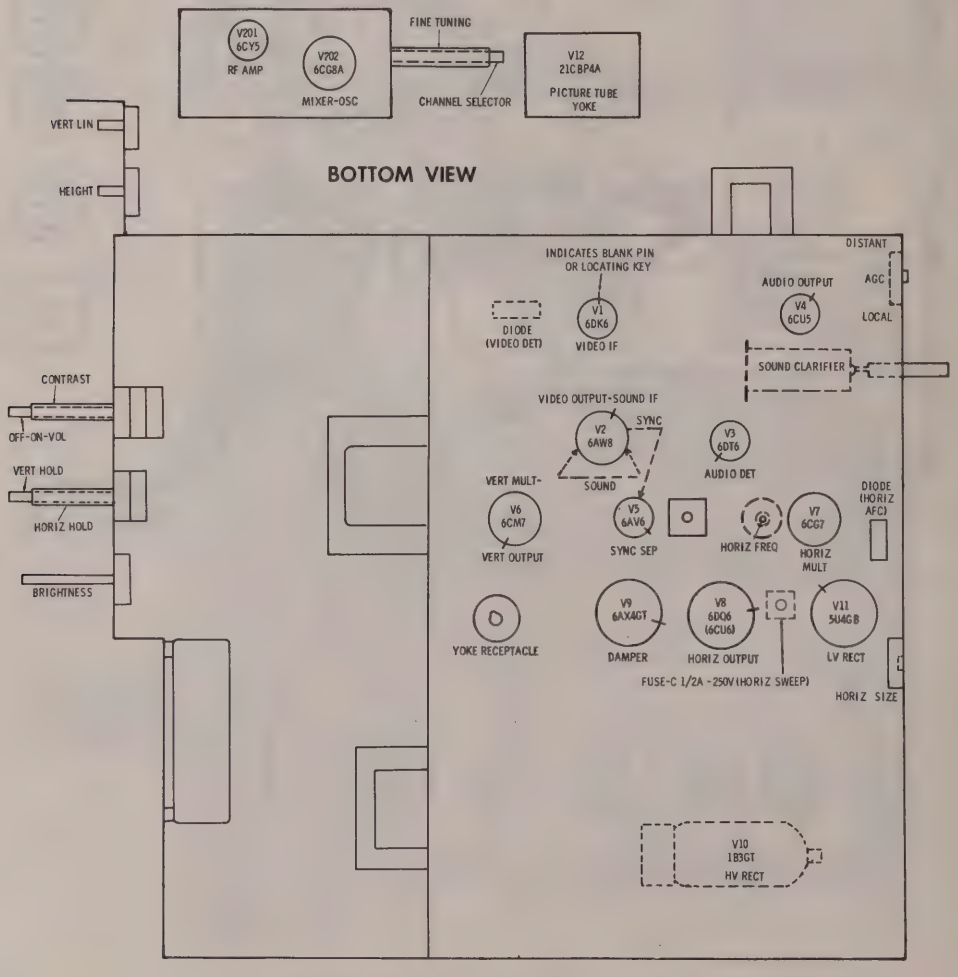
OLYMPIC MODELS KY147, U,
TY134, U (Ch. HY, HYU)

# RESISTANCE MEASUREMENTS

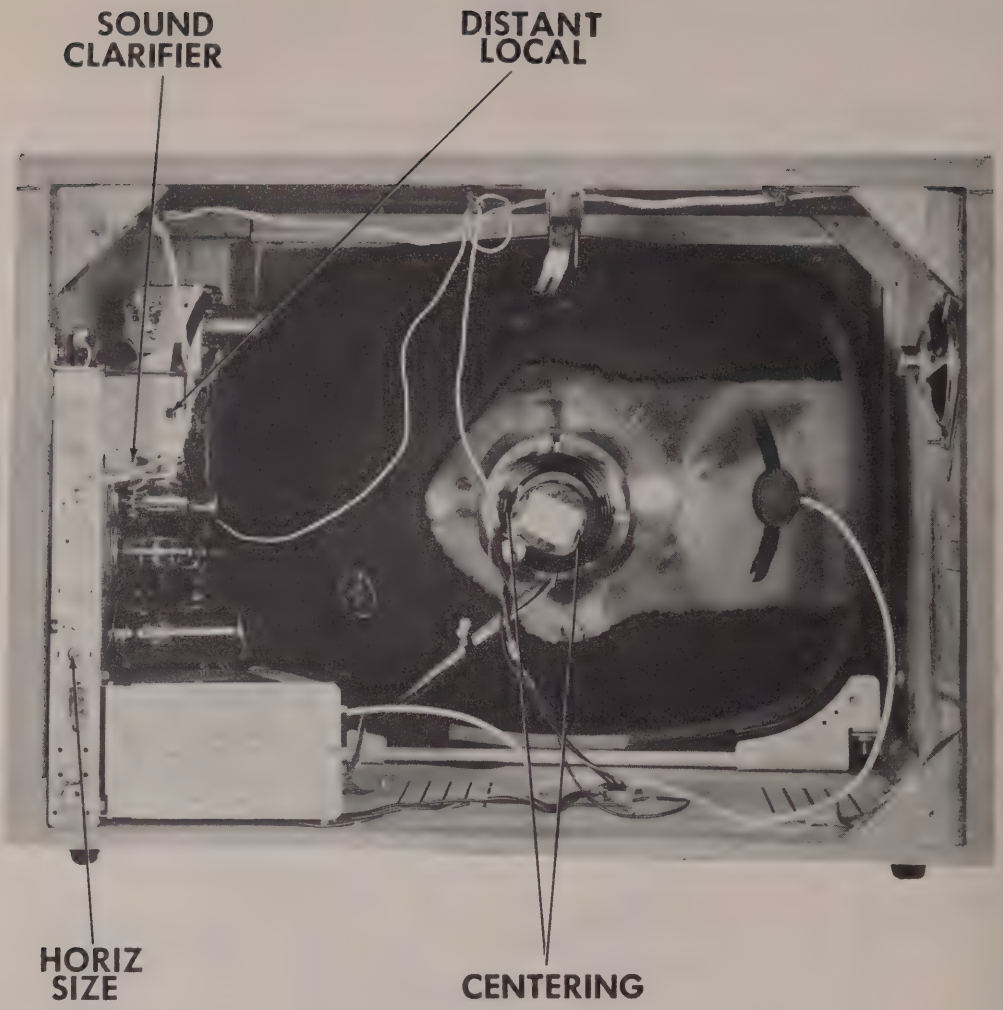
| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 6DK6 | 2.5Ω | 82Ω | 0Ω | .1Ω | ▪ 330Ω | ▪ 330Ω | 0Ω | | |
| V2 | 6AW8 | 0Ω | 1meg | †22K | .1Ω | 0Ω | ● 220Ω | 700K | ▪ 0Ω | †6800Ω |
| V3 | 6DT6 | 2.8Ω | 1000Ω | .1Ω | 0Ω | †270K | ▪ 0Ω | 560K | | |
| V4 | 6CU5 | ¶ | 450K | .1Ω | 0Ω | 450K | †390Ω | †560Ω | | |
| V5 | 6AV6 | 2.7meg | 0Ω | .1Ω | 0Ω | NC | NC | †100K | | |
| V6 | 6CM7 | † 2800Ω | NC | 0Ω | 0Ω | .1Ω | ● †1.8meg | ● 2meg | ● 1.8meg | 100Ω |
| V7 | 6CG7 | †10K | 2.5meg | 820Ω | .1Ω | 0Ω | †82K | 68K | 820Ω | 0Ω |
| V8 | 6DQ6 | 0Ω | 0Ω | NC | †8900Ω | 470K | TP | .1Ω | 0Ω | TOP CAP †35Ω |
| V9 | 6AX4GT | NC | TP | ¶250K | NC | †0Ω | NC | 0Ω | .1Ω | |
| V10 | 1B3GT | PINS 1 THRU 8 HAVE INFINITE RESISTANCE | | | | | | | | TOP CAP †690Ω |
| V11 | 5U4GB | NC | ¶ | NC | 30Ω | TP | 32Ω | TP | ¶ | |
| V12 | 21CBP4A | 0Ω | 22K | Pin 6 †50K | Pin 10 †50K | Pin 11 ● 250K | Pin 12 .1Ω | | | |
| V201 | 6CY5 | 1meg | 0Ω | 0Ω | .1Ω | ▪ .8Ω | ▪ 10K | 0Ω | | |
| V202 | 6CG8A | 15K | ▪ 10K | 0Ω | .1Ω | 0Ω | ▪ 2200Ω | ▪ 10K | 0Ω | 220K |
| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▪ MEASURED FROM 120V SOURCE.
† MEASURED FROM 300V SOURCE.
‡ MEASURED FROM PIN 3 OF V9

NC NO CONNECTION.
TP TIE POINT.




# TUBE PLACEMENT CHART




## CABINET—REAR VIEW

## HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and allow it to warm up for 2 minutes.

Tune in a TV station, preferably with a test pattern.

Connect a clip lead from point ⓑ to chassis. Connect another clip lead across the Horizontal Frequency coil (L14).

Adjust the Horizontal Hold until the picture synchronizes horizontally. (It may float back and forth).

Remove the clip lead from L14. Adjust the Horizontal Frequency slug (B1) until the picture is again in frequency. Remove clip lead from point ⓑ and chassis.

Turn Horizontal Size Trimmer (B2) counterclockwise until a vertical white line (drive line) appears near the center of the screen, then turn clockwise until line just disappears. If drive line cannot be obtained, adjust B2 for proper width.

If B2 is adjusted, recheck adjustment of B1 and Horizontal Hold.

PHOTOFACT* Folder

EIA MEMBER

**PRODUCTION CHANGE BULLETIN 229**

## SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 15 IN SET 413

WESTINGHOUSE MODELS HR102BN, HR103BN (CH, V-2500-2, V-2502-1)

Westinghouse Models HR102BN, HR103BN (Ch. V-2500-2, V-2502-1) were covered in PHOTOFACT Folder 15 - Set 413.

The following changes were made during late production.

Ch. V-2502-1

COMPONENT CHANGE

C30 is decreased from 10000mmf to 3300mmf.

R30 is decreased from 1meg to 680K.

R31 is increased from 150K to 330K.

COMPONENTS ADDED

A 2200mmf capacitor is added between the junction of R30, R31 and pin 2, section 2 of M8.

A 4700mmf capacitor is added from pin 2 (135 volt line) of the power plug to ground.

A 470K resistor is added from pin 1 of V7 (6AU6) to ground.

## SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 431

GENERAL ELECTRIC MODELS T-130B, T-131B, T-132B

General Electric Models T-130A, T-131A, T-132A were covered in PHOTOFACT Folder 9 - Set 431.

Models T-130B, T-131B, T-132B are electrically identical except for the following changes.

COMPONENT CHANGES

Volume control (R1) is changed from 500K (Part #RS-1450) to 3meg (Part #RS-1768).

Couplate (K1) is changed from Part #REK-011 to RS-1766.

Oscillator coil (L2) is changed from Part #RS-1430 to RS-1437.

Output transformer (T1) is changed from Part #RS-1416 to #RS-1767.

R7 is increased from 2200Ω to 15K.

R8 is increased from 220Ω to 1000Ω.

C5 is decreased from .33mfd to .047mfd.

## SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 3 IN SET 411

WESTINGHOUSE CHASSIS V-2364-1, -2, -3, -4

Westinghouse Models H-21K210, A, H-21K211, A, H-21KU210, A, H-21KU211, A, H-21T206, A, H-21T207, A, H-21TU206, A, H-21TU207, A (Ch. V-2364-1, -2, -3, -4) were covered in PHOTOFACT Folder 3 - Set 411.

The following is a list of changes made during late production.

SOUND LIMITER CIRCUIT REVISIONS

C25 is increased from 4.7mmf to 47mmf.

C26 is increased from 2.2mmf to 2.7mmf.

L12 is changed from Part #230V030H06 to 230V030H04.

R38 is decreased from 470K to 47K.

TO REDUCE 4.5MC DRIFT

The tube socket of V6 (3BN6) is replaced with a socket of different composition (Part #751V524H02).

PRODUCTION CHANGE BULLETIN 229

PRODUCTION CHANGE BULLETIN 229

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

## SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 423

Airline Models WG-4203A, WG-4303A were covered in PHOTOFACT Folder 1 - Set 423.

Models WG-4203B, WG-4303B are electrically identical except for the following changes.

COMPONENT CHANGE

The high voltage rectifier tube (V10) is changed from a 1X2B type to a 1K3 type.

The Horizontal Output Transformer (T3) is changed from Part #53X368 to #53X372.

VHF TUNER CHANGE

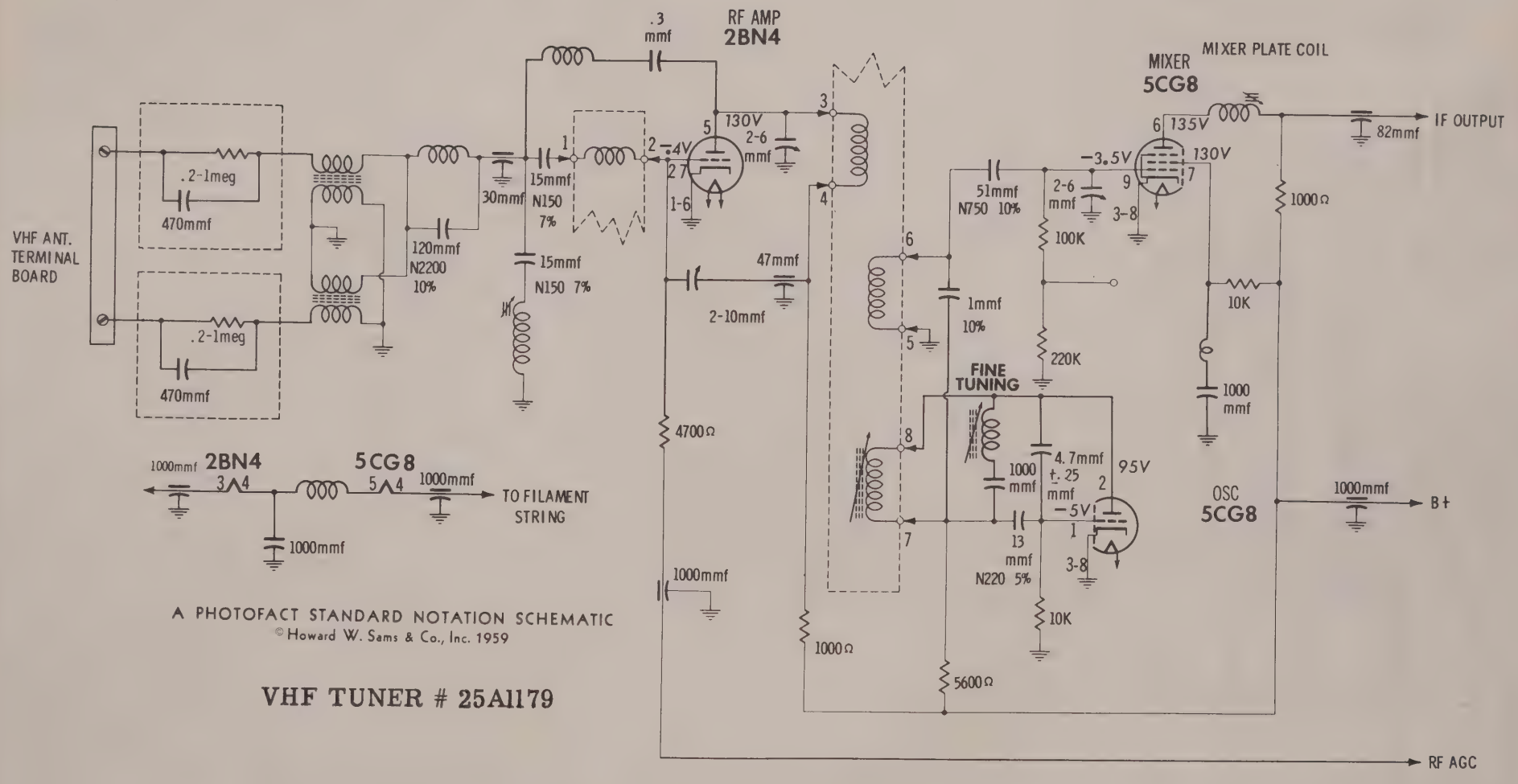
The VHF tuner is changed from Part #25A1173 to 25A1179.

A schematic diagram of the new tuner is given on the reverse side.

UHF TUNER CHANGE

The UHF tuner cover is changed from Part #25A1164 to 25A1180.

AIRLINE MODELS WG-4203B, WG-4303B




A PHOTOFACT STANDARD NOTATION SCHEMATIC

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## VHF TUNER # 25A1179

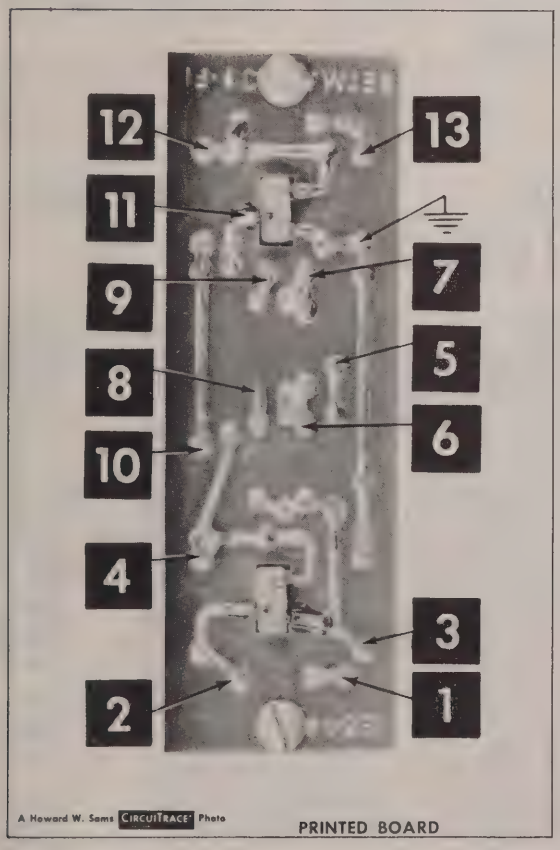
PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

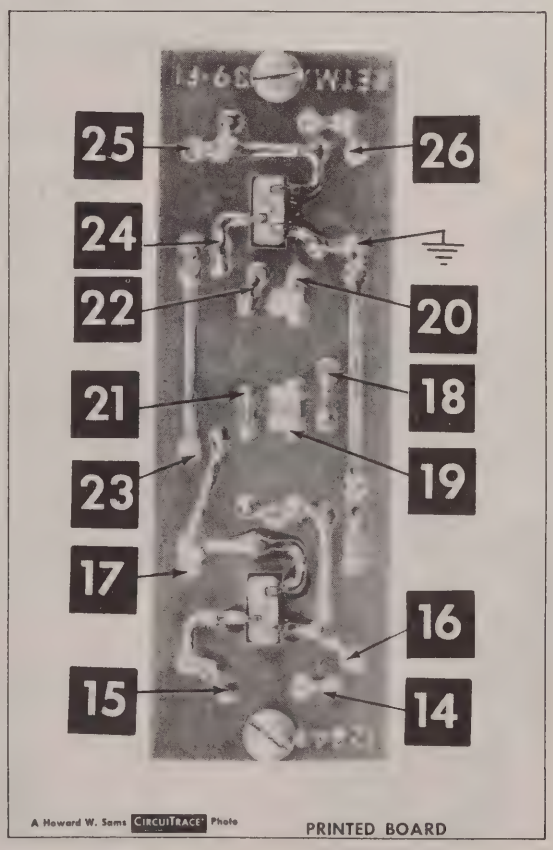
# ALTEC LANSING MODEL 445A

ALTEC LANSING
MODEL 445A

| | |
|---|---|
| TRADE NAME | Altec Lansing Model 445A |
| MANUFACTURER | Altec Lansing Corp., 1515 S. Manchester Ave., Anaheim, California |
| TYPE SET | AC Operated 4 Transistor-2 Tube Stereo Preamplifier |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles RATING 10 Watts, .15 Amp. @117 Volts AC |




PRINTED BOARD




PRINTED BOARD

ALTEC LANSING
MODEL 445A

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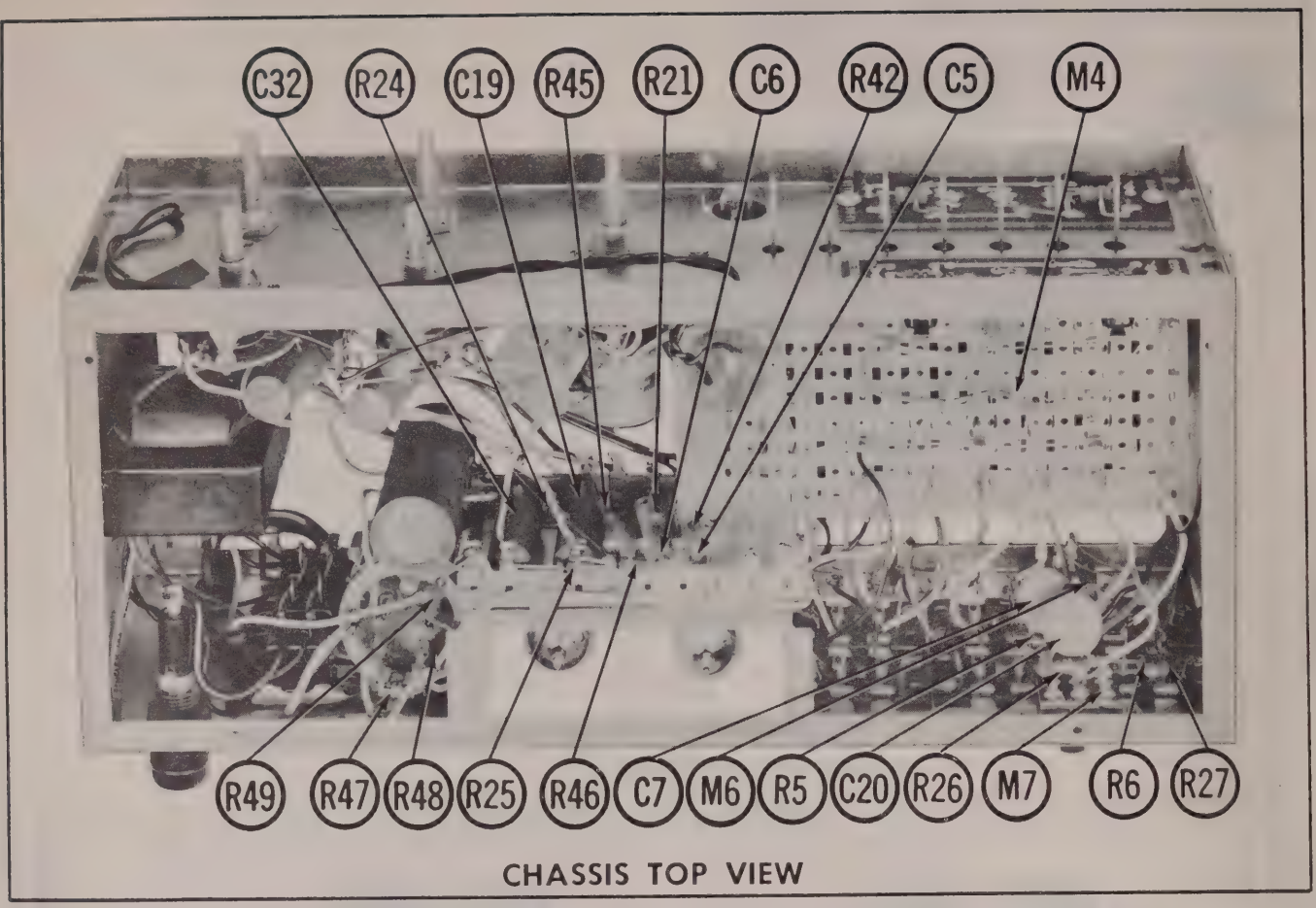
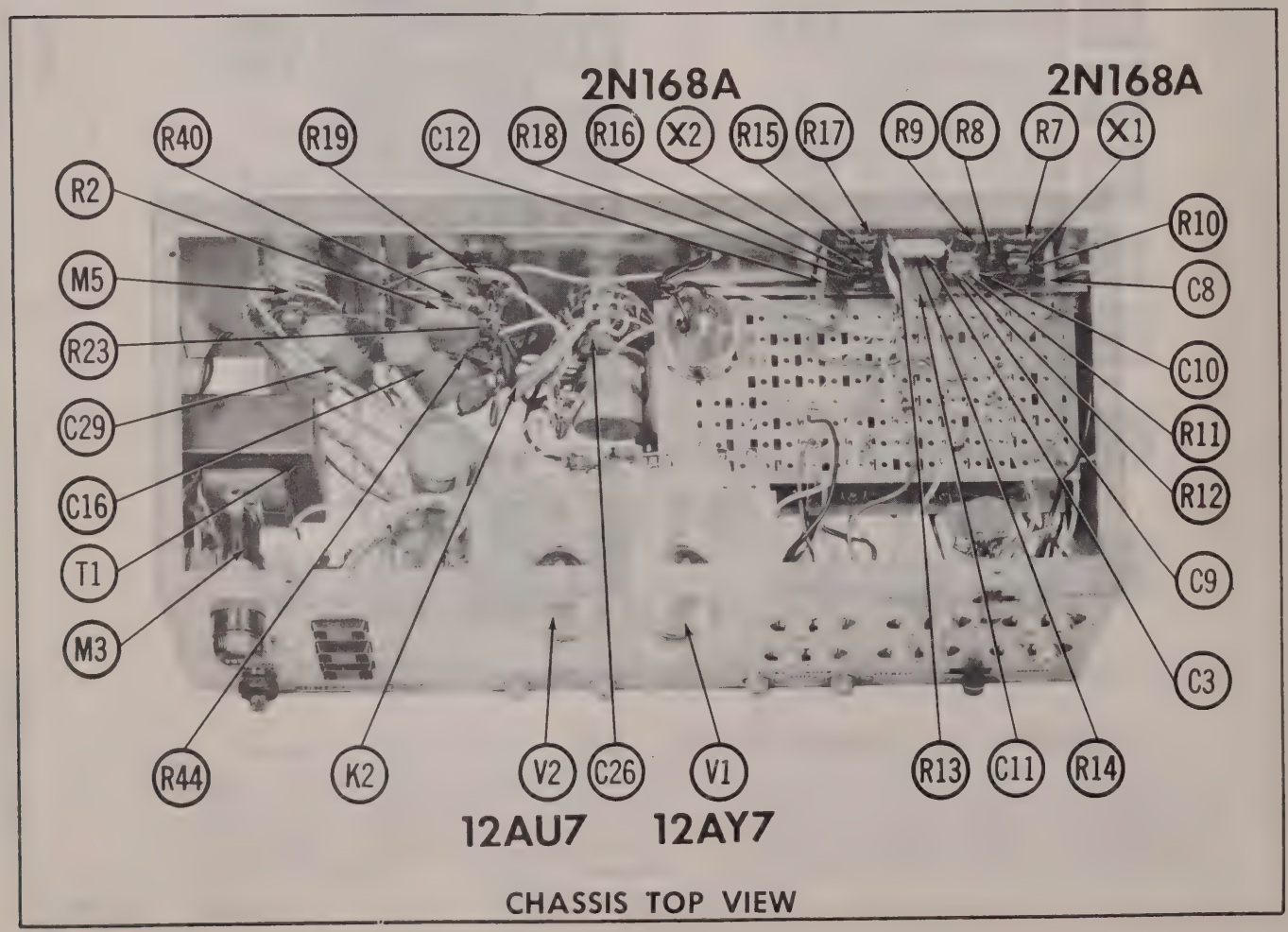



CHASSIS TOP VIEW




CHASSIS TOP VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES

| • CBS • | GENERAL ELECTRIC • | RAYTHEON • | SYLVANIA • |
|---|---|---|---|

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | Channel 1 AF Amp. - Channel 2 AF Amp. | 12AY7 |
| V2 | Channel 1 Cathode Follower - Channel 2 Cathode Follower | 12AU7 |

## TRANSISTORS

| ITEM No. | ORIG. TYPE | USE | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | | CBS PART No. | RCA PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| X1 | 2N168A | Channel 1 Tape, Phono, Mic Preamp. | | 2N438 | | 2N168 | NPN |
| X2 | 2N168A | Channel 1 Tape, Phono, Mic Preamp. | | 2N438 | | 2N168 | NPN |
| X3 | 2N168A | Channel 2 Tape, Phono, Mic Preamp. | | 2N438 | | 2N168 | NPN |
| X4 | 2N168A | Channel 2 Tape, Phono, Mic Preamp. | | 2N438 | | 2N168 | NPN |

## ELECTROLYTIC CAPACITORS

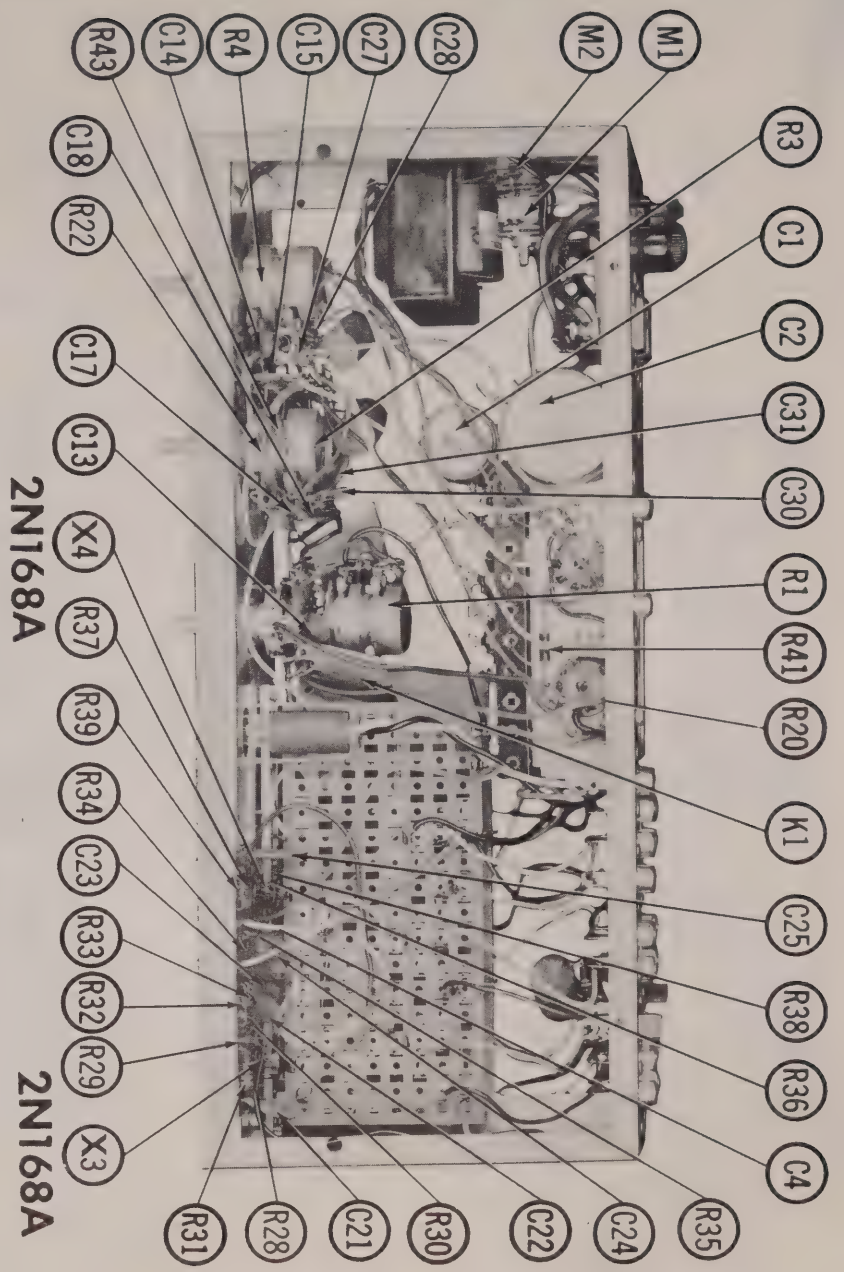
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | Altec Lansing PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | |
| C1 | 40 | 250 | | PRS1580 | BR4025 | TC58 | TD-40-250 | TVA-1511 | |
| C2A | ▲40 | 300 | | AFH4-02 | D0020 | FP447 | TMQ-3 | TVL-4579 | |
| B | ▲20 | 300 | | | | | | | |
| C | 10 | 300 | | | | | | | |
| D | ■40 | 300 | | | | | | | |
| C3 | 5 | 12 | | XPP-12005 | NLW5-15 | TT12X5 | ML5-15 | TE-1127 | |
| C4 | 5 | 12 | | XPP-12005 | NLW5-15 | TT12X5 | ML5-15 | TE-1127 | |
| C5 | 50 | 3 | | SRE3V50 | NLW50-3 | TT6X50 | ML50-3 | TE-1058 | |
| C6 | 50 | 3 | | SRE3V50 | NLW50-3 | TT6X50 | ML50-3 | TE-1058 | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C7 | 100 10% | | DI-100 | DD-101 | L10T1 | CCD-101 | CNO-310 | 10TS-T10 |
| C8 | 1mfd 3V | | | UK-105 | MP2W1 | | GEM-21 | HY-135 |
| C9 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C10 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C11 | 20000 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S2 |
| C12 | 100000 75V | | | DF-104 | MP2P1 | 1DP-2-104 | GEM-201 | TH-P10 |
| C13 | 1000 10% | | DI-1000 | DD-102 | 1R5D1 | CCS-102 | JL-210 | 10TS-D10 |
| C14 | 200 10% | | DI-200 | DD-201 | L10T2 | CCD-201 | MCB237 | 10TS-T20 |
| C15 | 750 10% | | DI-750 | DD-751 | 1R5T75 | CCS-751 | JL-375 | 10TS-T75 |
| C16 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C17 | 750 10% | | DI-750 | DF-751 | 1R5T75 | CCS-751 | JL-375 | 10TS-T75 |
| C18 | 3300 10% | | DI-3300 | | PM6D33 | CCS-332 | JL-233 | 10TS-D33 |
| C19 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C20 | 100 10% | | DI-100 | DD-101 | L10T1 | CCD-101 | CNO-310 | 10TS-T10 |
| C21 | 1mfd 3V | | | UK-105 | MP2W1 | | GEM-21 | HY-135 |
| C22 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C23 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C24 | 20000 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S2 |
| C25 | 100000 75V | | | DF-104 | MP2P1 | 1DP-2-104 | GEM-201 | TH-P10 |
| C26 | 1000 10% | | DI-1000 | DD-102 | 1R5D1 | CCS-102 | JL-210 | 10TS-D10 |
| C27 | 200 10% | | DI-200 | DD-201 | L10T2 | CCD-201 | MCB237 | 10TS-T20 |
| C28 | 750 10% | | DI-750 | DD-751 | 1R5T75 | CCS-751 | JL-375 | 10TS-T75 |
| C29 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |
| C30 | 750 10% | | DI-750 | DD-751 | 1R5T75 | CCS-751 | JL-375 | 10TS-T75 |
| C31 | 3300 10% | | DI-3300 | | PM6D33 | CCS-332 | JL-233 | 10TS-D33 |
| C32 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |

## CHASSIS BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | Altec Lansing PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1A | Switch | | 12648 | | | | | Contour |
| B | 100K | | | | | | | Volume, Left Channel |
| C | 100K | | | | | | | Volume, Right Channel |
| R2A | 100K | | 12662 | | | | | Spatial Orientation, Left Ch. |
| B | 100K | | | | | | | Spatial Orientation, Right Ch. |
| R3A | 2meg | | 12660 | F1-68 | | ■ QJ-1119R | ▲ UE4048 | Bass, Left Channel |
| B | 2meg | | | R2-68 | | | | Bass, Right Channel |
| R4A | 1meg | | 12661 | FL-52 | | ● QJ-1118R | ◆ UE4049 | Treble, Left Channel |
| B | 1meg | | | R2-52 | | | | Treble, Right Channel |

■ "Concentrikit" Equivalent: K-2 Kit with Base Elements & Shafts: B13-139, P1-024 (Panel)
(Not available as a factory assembled unit. B13-139, R1-105 (Rear)
● " Concentrikit" Equivalent: K-2 Kit with Base Elements & Shafts: B13-137, P1-024 (Panel)
(Not available as a factory assembled unit. B13-137, R1-105 (Rear)
▲"STA-LOC" Equivalent: FA26A, RU26A, OS750A, IS1187.
◆"STA-LOC" Equivalent: FA16A, RU16A, OS750A, IS1187.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R5 | 560K | |
| R6 | 18K | |
| R7 | 1meg | |
| R8 | 51K 5% | |
| R9 | 150K | |
| R10 | 180Ω 5% | (270Ω) * |
| R11 | 15K | |
| R12 | 15K | |
| R13 | 270K | |
| R14 | 10K | |
| R15 | 1meg | |
| R16 | 51K 5% | |
| R17 | 150K | |
| R18 | 10meg | |
| R19 | 47K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R20 | 100K | |
| R21 | 1000Ω | |
| R22 | 430K 5% | |
| R23 | 100K | |
| R24 | 47K | |
| R25 | 1meg | |
| R26 | 560K | |
| R27 | 18K | |
| R28 | 1meg | |
| R29 | 51K 5% | |
| R30 | 150K | |
| R31 | 180Ω 5% | (270Ω) * |
| R32 | 15K | |
| R33 | 15K | |
| R34 | 270K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R35 | 10K | |
| R36 | 1meg | |
| R37 | 51K 5% | |
| R38 | 150K | |
| R39 | 10meg | |
| R40 | 47K | |
| R41 | 100K | |
| R42 | 1000Ω | |
| R43 | 430K 5% | |
| R44 | 100K | |
| R45 | 47K | |
| R46 | 1meg | |
| R47 | 47K | |
| R48 | 2200Ω | |
| R49 | 2200Ω | |

* Alternate

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | Altec Lansing PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Channel 1 Contour Comp. | 200mmf, 8000mmf, 47K, 47K, 100K, 150K, 240K | 12462 | |
| K2 | Channel 2 Contour Comp. | 200mmf, 8000mmf, 47K, 47K, 100K, 150K, 240K | 12462 | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Altec Lansing PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V ⓐ .15A | 110V ⓐ .040A (AC) | 6.3 VCT ⓐ .75A | 6367 | | | | | | |

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | Altec Lansing PART No. | FEDERAL PART No. | INTERNATIONAL PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .006A | ① | | SD-94 ② | 10 ② | | ① Selenium Type |
| M2 | .006A | ① | | SD-94 ② | 10 ② | | ② Silicon Type |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Altec Lansing PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M3 | 3AG | ½A 250V | | | 312.500 (3AG ½A 250V) | 342001 | AGC ½ | HKP |

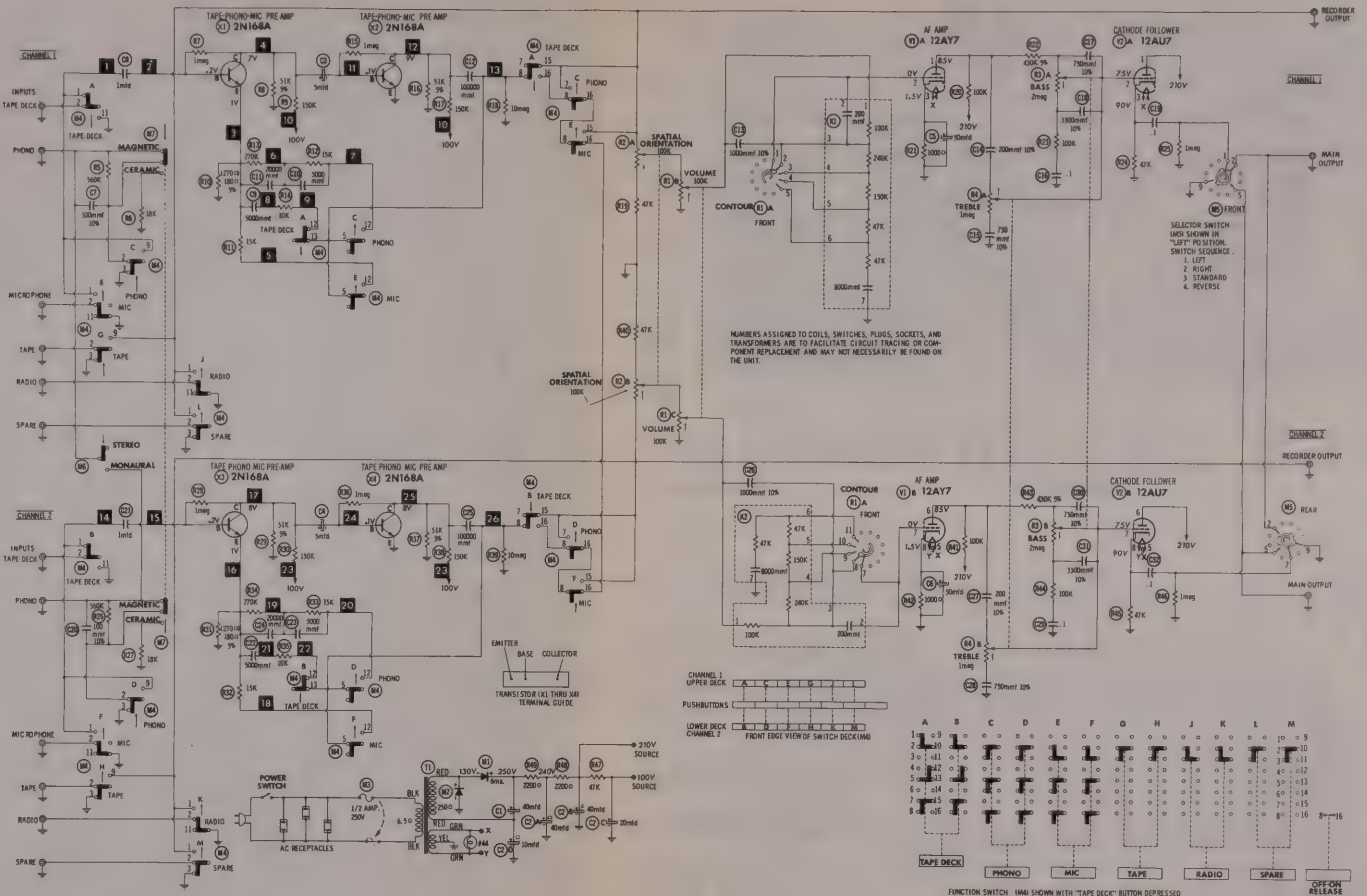
## MISCELLANEOUS

| ITEM No. | PART NAME | Altec Lansing PART No. | NOTES |
|---|---|---|---|
| M4 | Switch | 12813 | Function (Pushbutton Type) |
| M5 | Switch | 12623 | Selector (Left-Right-Std. -Rev) Rotary Type |
| M6 | Switch | | Monaural-Stereo Slide Type SPDT |
| M7 | Switch | | Magnetic-Ceramic Slide Type DPDT |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)




● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 12AY7 | †105K | 100K | 1000Ω | .1Ω | .1Ω | †105K | 100K | 1000Ω | .1Ω |
| V2 | 12AU7 | †440Ω | †2.5meg | 47K | .1Ω | .1Ω | †440Ω | †2.5meg | 47K | .1Ω |

† MEASURED FROM OUTPUT OF M1.

RESISTANCE READINGS

| ITEM | TYPE | BASE | EMITTER | COLLECTOR |
|---|---|---|---|---|
| X1 | 2N168A | 1meg | 180Ω | 40K |
| X2 | 2N168A | 1meg | 0Ω | 40K |
| X3 | 2N168A | 1meg | 180Ω | 40K |
| X4 | 2N168A | 1meg | 0Ω | 40K |

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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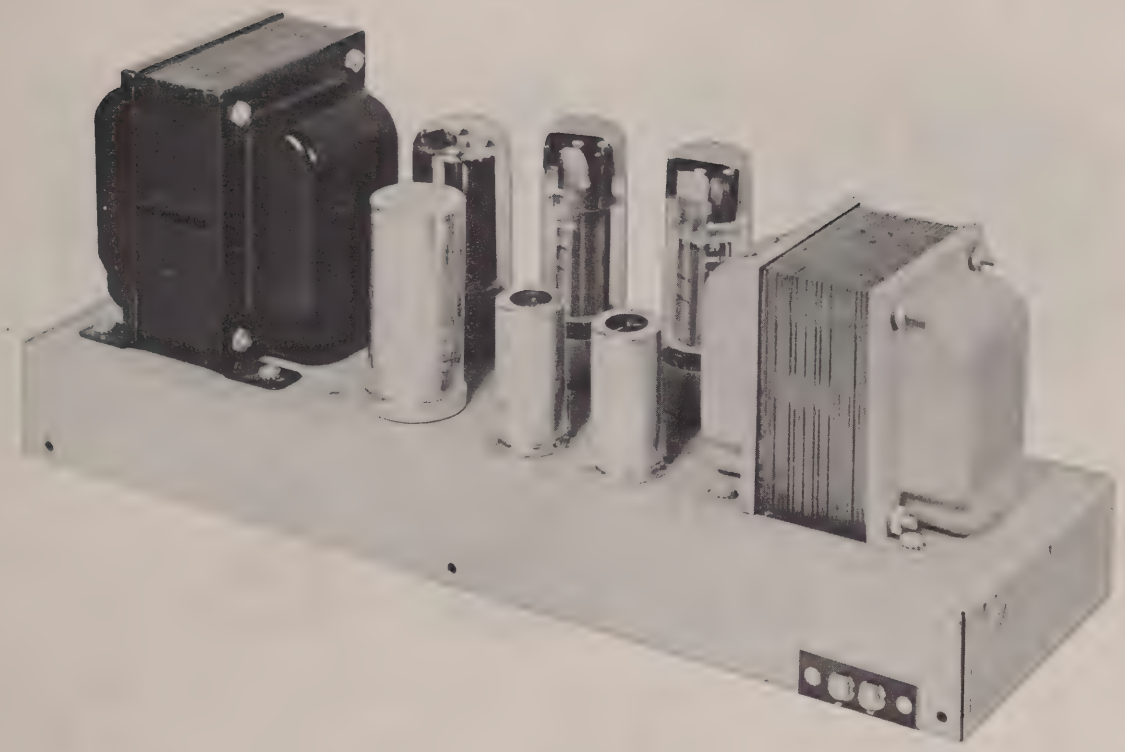
**ALTEC LANSING MODEL 445A**

PHOTOFACT* Folder

# AMPEX MODEL 30 WATT AMP (CUSTOM SERIES 1959)

AMPEX MODEL 30 WATT AMP
(CUSTOM SERIES 1959)



AMPEX MODEL 30 WATT AMP
(CUSTOM SERIES 1959)

| | |
|---|---|
| TRADE NAME | Ampex Model 30 Watt Amplifier (Custom Series 1959) |
| MANUFACTURER | Ampex Audio, Inc., 1020 Kifer Road, Sunnyvale, California |
| TYPE SET | AC Operated 5 Tube Audio Amplifier |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles RATING 110 Watts, 1.1 Amp. @117 Volts AC |

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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JX357

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA) |
|---|---|---|
| V1 | AF Amplifier | EF86/6267 |
| V2 | AF Amp. -Phase Inverter | ECC82/12AU7 |
| V3 | Output | EL34/6CA7 |
| V4 | Output | EL34/6CA7 |
| V5 | Rectifier | 5U4GB |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA: AMPEX PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1A | ▲40 | 500 | 55-0014 | AFH3-50-07 | C0373 | FP396.12 | | TVL-4840 | |
| B | ■20 | 400 | | | | | | | |
| C | ▲10 | 350 | | | | | | | |
| C2 | 50 | 50 | 55-0035 | PRS50V50 | BR505 | TC39 | TD-50-50 | TVA-1308 | |

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA: AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C3 | 20000 | | BPD-02 | DD-203 | BYA6S2 | CCD-203 | B-120 | 5HK-S2 |
| C4 | 150 | | DI-150 | DD-151 | L10T15 | CCD-151 | B-315 | 5GA-T15 |
| C5 | .047 400V | | P488N-047 | DF-503 | CUB4S47 | 4DP-3-473 | GEM-4147 | 4TM-S47 |
| C6 | .047 400V | | P488N-047 | DF-503 | CUB4S47 | 4DP-3-473 | GEM-4147 | 4TM-S47 |
| C7 | .047 400V | | P488N-047 | DF-503 | CUB4S47 | 4DP-3-473 | GEM-4147 | 4TM-S47 |

## CONTROLS

| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA: AMPEX PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500K | ½ | 52-0005 | AB-60 | B47-500K-Z | B13-133 | TA55A | Level |
| B | Shaft | | | AK-1 | Not Req. | TM-1 | Not Req. | |
| R2 | 100Ω | 2(WW) | 52-0017 | | | | FL100P | Bias |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

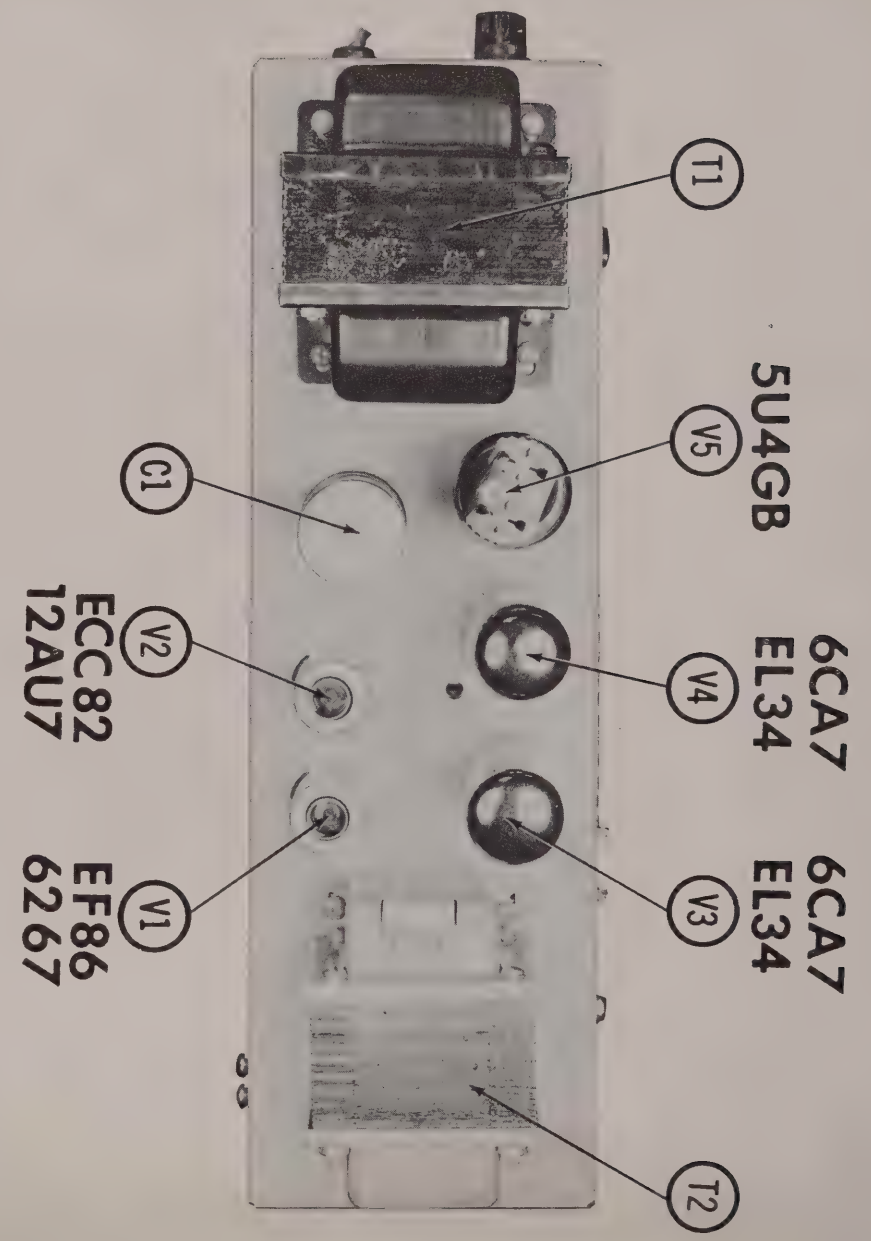
| ITEM No. | RATING | REMARKS |
|---|---|---|
| R3 | 1.5meg | |
| R4 | 270K | |
| R5 | 750Ω 5% | |
| R6 | 4700Ω | |
| R7 | 220K | |
| R8 | 100K 5% | |
| R9 | 1.5meg | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R10 | 110K 5% | |
| R11 | 82K | |
| R12 | 330K | |
| R13 | 100Ω | |
| R14 | 1000Ω | Note 1 |
| R15 | 330K | |
| R16 | 100Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R17 | 1000Ω | Note 1 |
| R18 | 175Ω 5% 7W | (#51-0086) |
| R19 | 56K 5% | (33K)* |
| R20 | 39K | |
| R21 | 39K 1W | |

Note 1. Not used in some versions.
* Alternate

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | AMPEX PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V@ 1.1A | 740 VCT @.140A | 5V@ 3A | 58-0008 | 24R06U | | | PC8411 | 24R06U | R-17A |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3 VCT @3.6A | | | | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | AMPEX PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 5500Ω CT With Screen Taps@ 1200Ω | 16Ω | 58-0009 | 22S39 ① | A-3102① | | | 22S39 ① | S-146A | ① Drill New Mounting Holes |

## FUSES

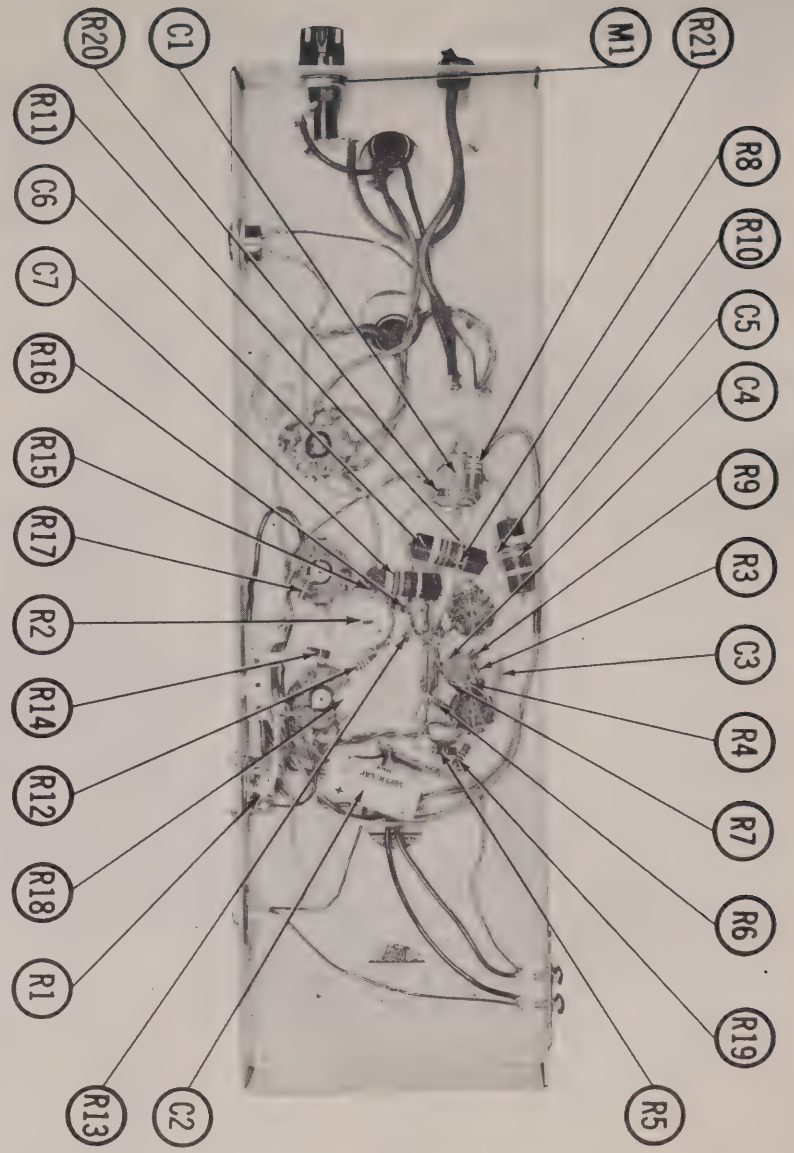
| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AMPEX PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 3AG | 2A 250V | 61-0005 | 63-0015 | 312002 (3AG 2A 250V) | 342001 | AGC 2 | HKP |

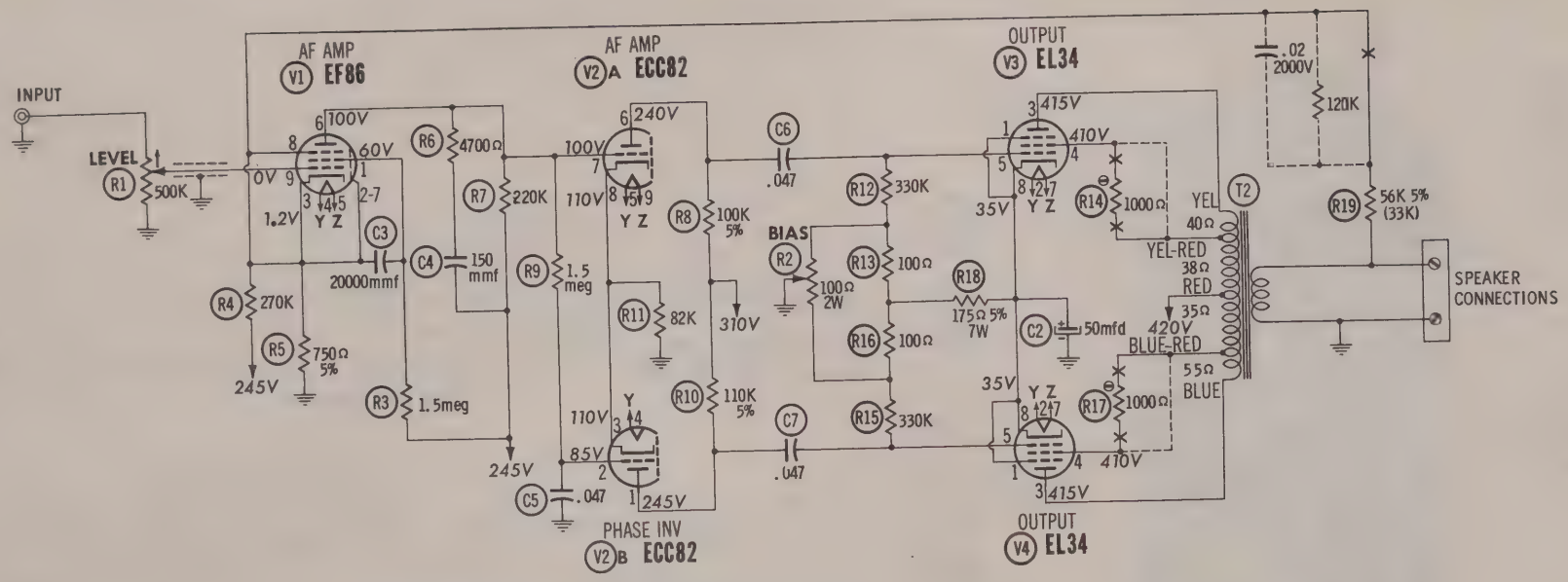
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

## CHASSIS BOTTOM VIEW

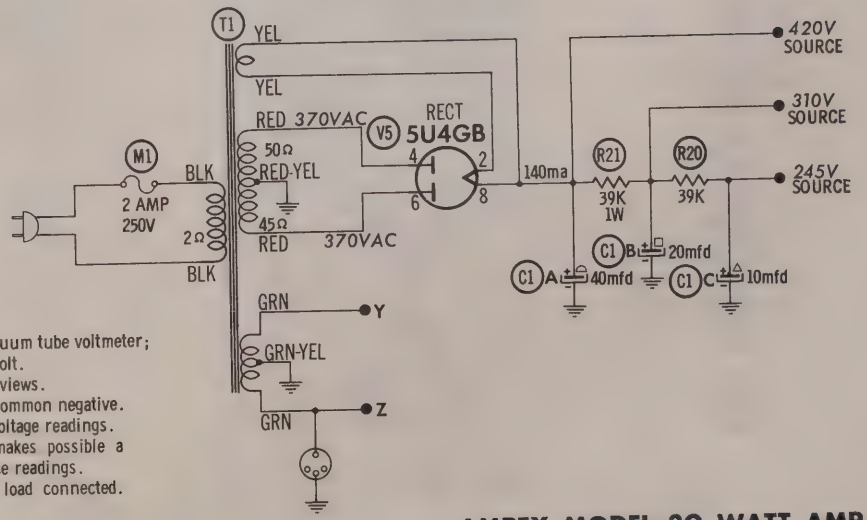





RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | EF86 6267 | †1.5meg | 750Ω | 750Ω | .1Ω | .1Ω | †300K | 750Ω | 750Ω | 0Ω |
| V2 | ECC82 12AU7 | †150K | †1.8meg | 82K | .1Ω | .1Ω | †140K | †300K | 82K | .1Ω |
| V3 | EL34 6CA7 | 270Ω | .1Ω | †80Ω | †1000Ω | 330K | NC | .1Ω | 270Ω | |
| V4 | EL34 6CA7 | 270Ω | .1Ω | †90Ω | †1000Ω | 330K | TP | .1Ω | 270Ω | |
| V5 | 5U4GB | NC | ¶ | TP | 50Ω | NC | 45Ω | TP | ¶ | |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V5.
▪ MEASURED FROM PIN 8 OF V3.




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

**⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION**

**DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM**

**ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)**

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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# AMPEX MODEL 30 WATT AMP (CUSTOM SERIES 1959)

PHOTOFACT* Folder



COLLARO MODELS
TC-99, TSC-840

COLLARO MODELS
TC-99, TSC-840

## GENERAL INFORMATION

Collaro Models TC-99 and TSC-840 record changers automatically position the tone arm for 7-, 10-, and 12-inch records. The records may be intermixed in any order, provided they are of the same speed and groove.

Both models have two-piece, five-pin, plug-in, counterbalanced stereo tone arms. The models are identical, except the TC-99 has a heavier, six-pound, 12-inch turntable.

A velocity trip mechanism provides a fast record change. A constant-speed change cycle is provided for all records, because the changing mechanism is driven directly by the motor.

The changers automatically shut off after the last record has been played.

Connect these changers to an outlet supplying 110-125 volts, 60 cycles AC only, unless otherwise specified.

Manufactured by:

Collaro Limited
Ripple Works, By-Pass Road
Barking, Essex, England

Distributed in U. S. by:

Rockbar Corporation
211 East 37th Street
New York 16, N. Y.

*This material compiled and published by*

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

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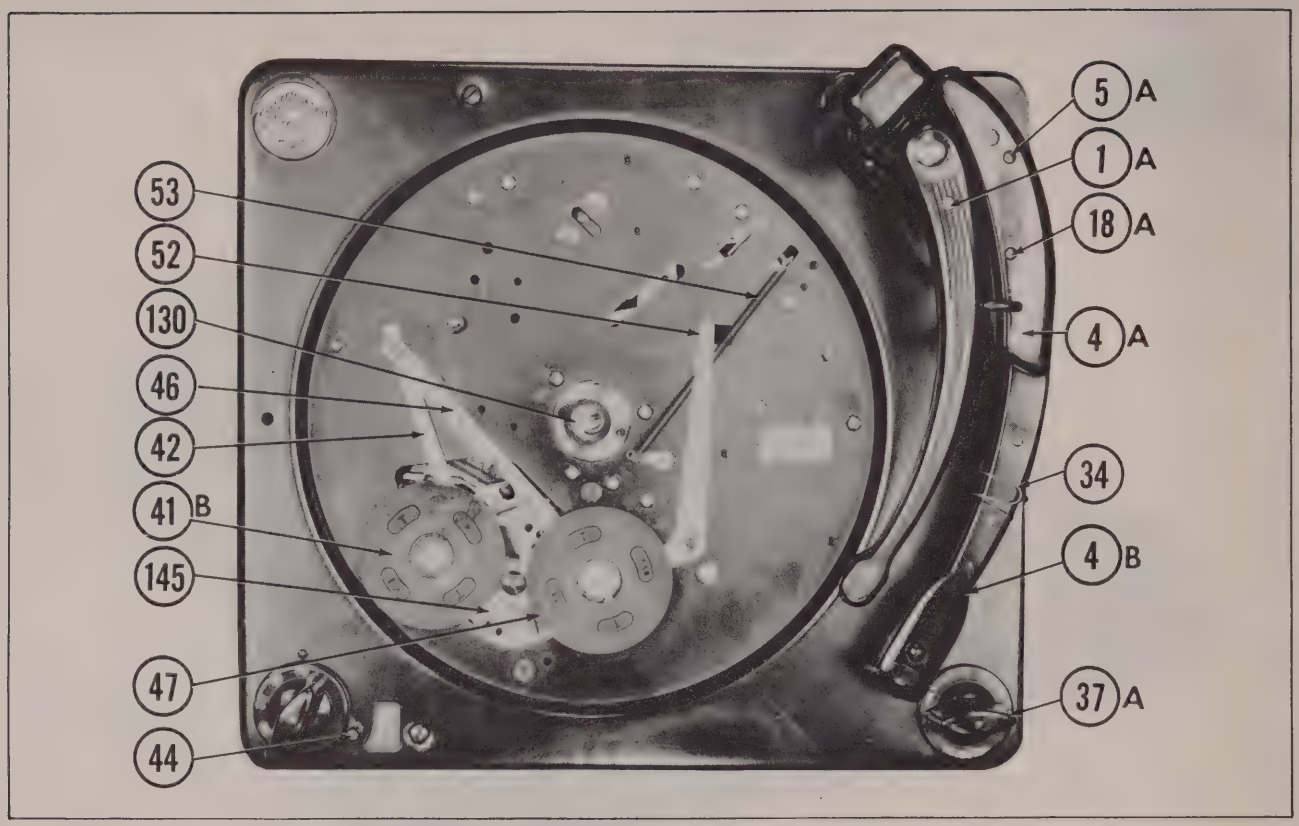



FIG. 1 TOP VIEW OF MECHANISM WITH TURNTABLE REMOVED

## OPERATING INSTRUCTIONS

### Loading

Raise record balancing arm (1) clear of the spindle (by using the finger lift near the wide end). Swing the arm out over the pickup arm. Place records on the spindle (ten records or less), and lower them to the offset shelf. Holding the records level, replace record balancing arm (1) on the spindle.

NOTE: Seven, ten-, and twelve-inch records can be intermixed on this changer. But be certain that they are of the same playing speed and groove.

### Starting

After making sure the stylus and speed controls are properly set, start the changer by turning the Start-Stop-Reject control to the left and releasing it when the turntable starts to rotate. The changer will operate automatically until the last record has been played. At this time the pickup arm will return to its rest, and the supply to the motor will be shut off.

### Unloading

Lift record balancing arm (1) and swing it out over the pickup arm. With both hands and with your fingers under the edge of the bottom record, lift the records straight up and off the spindle.

### Rejecting

A record may be rejected at any time by turning the Start-Stop-Reject control fully to the left and releasing it. The pickup arm will immediately rise from the record, and the next record will drop onto the turntable and start playing.

### Stopping

The changer may be stopped at any time by turning the Start-Stop-Reject control fully to the right and releasing it. The pickup arm will immediately rise from the record and return to its rest position, and the supply to the motor will be switched off automatically.

### Manual Operation

1. Raise record balancing arm (1) from the spindle and swing it to the right, past the pickup arm.
2. Clamp the tone arm to rest post (36A).
3. Place the Auto-Manual lever in the Auto position. Rotate the Start-Stop-Reject control counterclockwise and release it. Allow the changer to go through its cycle.
4. Pull the Auto-Manual lever forward to the Manual position.
5. Lower the record carefully to the turntable. Release the tone arm and set it down so that the stylus is in the lead-in groove of the record.
6. To return the changer to automatic, place the Auto-Manual lever in the Auto position; then rotate the Start-Stop-Reject control clockwise and release it.

## Muting

The cartridge is muted during the change cycle. Thus, undesirable noises are not reproduced between records. In addition, muting prevents the unpleasant running-down effect due to slowing of the turntable when a record is rejected or when the Start-Stop-Reject control is turned to the Stop position.

## Retractable Drive

The rubber-tired idler wheels are automatically retracted when the unit is switched off. Thus, flats are prevented from developing on the tires. (Flats are caused by prolonged contact of the idler wheels under pressure while the changer is not being used. Flat idler wheels will result in noisy running and uneven turntable speed.)

## 45-Rpm Adapter

The record changer will play 45-rpm records (with the large center hole) when the adapter is used.

1. With the changer turned off and record balancing arm (1) clear of the record spindle, slip the 45-rpm adapter over the record spindle. Face the number 45 toward the tone arm side of the changer.

2. Press the adapter down while turning it slightly to the right and left, until the 45-rpm spindle is fully seated on the center spindle.

3. Place up to ten 45-rpm records on the spindle adapter. Move record balancing arm (1) over until it rests against the outer edge, but not on top of, the record stack. The changer may now be operated in the normal manner. Be sure the speed is set to 45 and the stylus is turned to the microgroove position.

4. To remove the adapter, move record balancing arm (1) aside, and pull the adapter straight up from the center spindle.

# CHANGE CYCLE

The velocity trip mechanism starts the change cycle by the faster inward movement of the tone arm as the stylus enters the lead-out groove at the end of a record.

The tone arm assembly and tone arm tripping arm (24) are secured together so that they move in unison. As the tone arm nears the end of a record, the pin on the end of tone arm tripping arm (24) pushes trip feed lever (67). Trip feed lever (67), in turn, carries striker arm (102) in toward the turntable hub. Striker arm (102) is fed inward by the friction provided by its own weight as it rests on the curved end of trip lever (67).

While a record is playing, the slight movement of striker arm (102) is not fast enough to trip the mechanism. The reason is that, on each revolution of the turntable, the wiping action of the turntable hub projection (point A on the Exploded View) moves striker arm (102) backward far enough to clear the hub projection.

As the needle enters the lead-out groove of a record, the tone arm advances rapidly toward the spindle. Striker arm (102) is moved fast enough and far enough to engage the turntable hub projection (point A on the Exploded View). As the hub projection engages striker arm (102), the arm is pushed far enough away from the turntable hub (toward the tone arm) to pivot automatic trip lever (52). As the lever pivots, it releases main gear release lever (136) from the pin on top of main drive gear (104). Main drive gear (104) is unlocked from its out-of-cycle position. In addition, cycle drive wheel (47) with its associated gear train is pulled into contact with motor pulley (142) by cycle drive wheel actuating spring (133). Thus, cycle drive wheel (47) is now in position to drive the mechanism through the change cycle.

As main drive gear (104) starts to rotate, operating bar (91)--which is secured in an eccentric position on main drive gear (104) — is pulled toward the front of the changer. Tone arm actuating lever (74) and operating bar (91) move toward the front. In so doing, they relieve all pressure from the lift pin and muting switch lever (95A). Lift pin lift spring (26) can now raise tone arm lift pin (23). Lift pin (23), in turn, raises the tone arm from the record.

At the same time muting switch assembly (96) is closed. The tone arm cartridge is shorted out, which thus prevents any undesirable noise from coming through the amplifier while the mechanism is in cycle.

Simultaneously, tone arm positioning plate (68) contacts tone arm tripping arm (24). This is the connection that directs the tone arm inward, through a friction clutch arrangement, when that phase of the change cycle is reached.

Tone arm lateral lever (69) is now pulled forward by tone arm actuating lever (74). This action swings the tone arm clear of the turntable.

At this time, the roller arm on the bottom of main drive gear (104) actuates record dropping lever (164). Record dropping lever (164), in turn, moves spindle slide plate (120), which actuates record selector pawl (119). Record selector pawl (119) moves upward until its upper end engages the center hole of the lowest record in the stack. Pawl (119) then moves sideways enough to push the record off the spindle shelf.

Main drive gear (104) has rotated far enough for operating bar (91) to reach its maximum forward travel. Now main drive gear (104) starts moving toward the rear of the changer. At the same time, tone arm actuating lever (74), connected to operating bar (91), also moves toward the rear of the changer. Tone arm return lever (89) is released and--through the action of tone arm return lever spring (77)--pivots to the rear. In so doing, tone arm return lever (89) carries with it tone arm positioning plate (68). Through the friction clutch arrangement between tone arm positioning plate

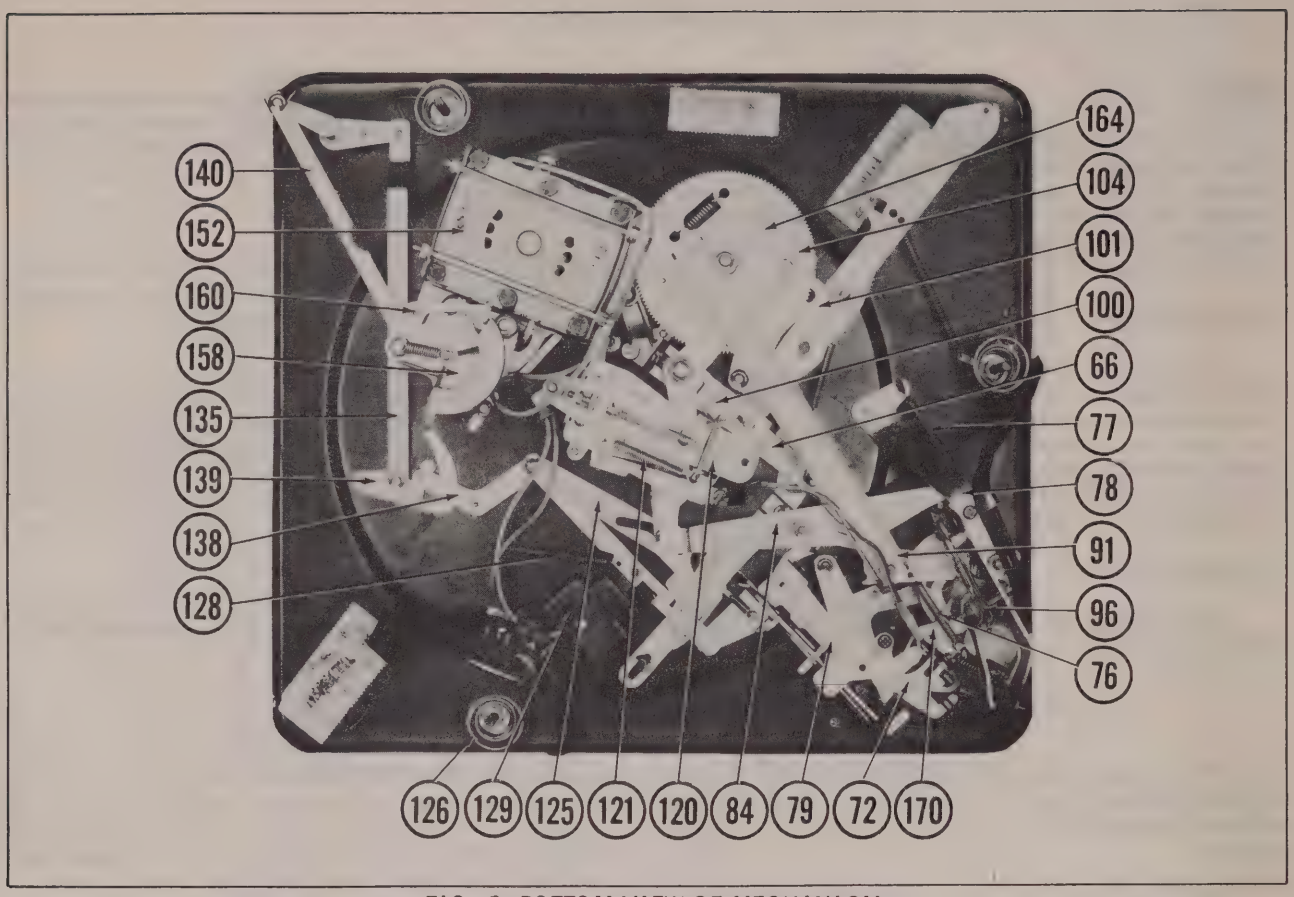



FIG. 2 BOTTOM VIEW OF MECHANISM

(68) and tone arm tripping arm (24), the plate, in turn, moves the tone arm inward over the record.

The mechanism is automatically indexed--by record gate cam and finger (30)--for the tone arm to land on 7-, 10-, or 12 - inch records. Record gate cam and finger (30) has three positions: upper for 7-inch, middle for 10-inch, and lower for 12-inch setdown. Whenever the mechanism goes through a change cycle, the tone arm lands in the 7-inch position, unless a 10- or 12 - inch record contacts record gate cam and finger (30). Consequently, setdown positioning lever (35A) blocks tone arm positioning plate (68) at one of three positions--depending upon the size of record dropped from the spindle shelf.

When the tone arm is directly over the record lead-in groove, tone arm actuating lever (74) actuates lift pin and muting switch actuating link (93). This, in turn, pivots lift pin and muting switch actuating lever (95A) downward, to lower the tone arm onto the record.

During the preceding sequence of lowering the tone arm to the record, muting switch (96) opens, and the cartridge becomes "live" again.

The pin on top of main drive gear (104) now moves against main gear release lever (136) and locks main drive gear (104) in the out-of-cycle position. This action also draws the cycle drive wheel (47) away from the motor shaft. The change cycle is now completed.

## AUTOMATIC STOP

The automatic stop operates after the last record has been played. After record balancing arm (1) has dropped as far as it will go, auto-stop lever (79) depresses. This allows auto-stop catch plate (80A) to fall and to retain tone arm return lever (89). Thus, the tone arm is not returned inward over the record, but descends to its rest at the end of the change cycle. At the same time, tone arm return lever (89), due to switch-off plate (92), restrains switch-off link (62) against the pull of switch-off spring (113). The turned-up end of switch-off link (62) is held in the path of the stud, located on top of operating bar (91). At the end of the cycle, the notch in switch pawl (127) is disengaged. Switch and idler wheel actuating spring (128) holds the motor switch open. Simultaneously, the spring retracts motor idler wheel (41) through the action of idler wheel actuating lever (138) and idler wheel retracting link (42).

After switching the changer on again, stop lever (60) disengages the turned-up end of switch-off link (62) from the stud on top of operating bar (91). This allows the notch in switch pawl (127) to engage the pin underneath the base plate. The motor switch is thereby held closed. At the same time, motor idler wheel (41) is held against the motor pulley and turntable rim. During this time, if one or more records have been loaded onto the changer, auto-stop lever (79) will be

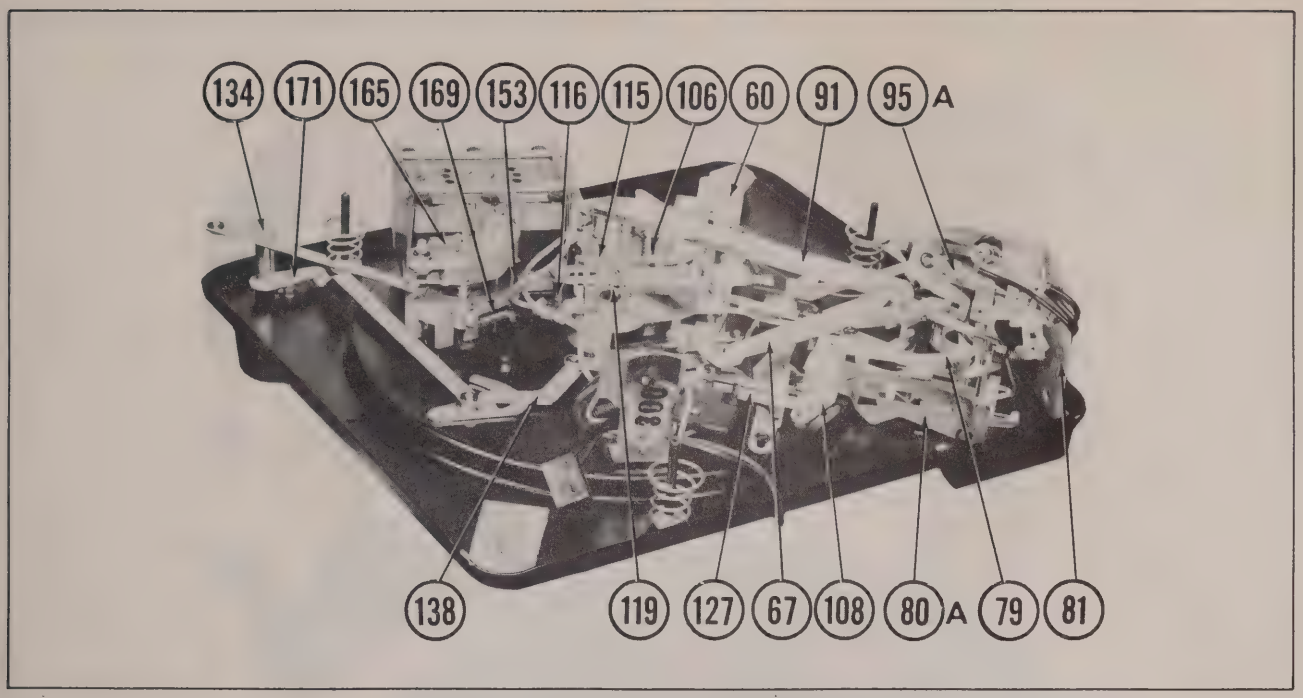



FIG. 3 BOTTOM VIEW OF MECHANISM

lifted--under the influence of automatic stop lever springs (53)--as soon as tone arm return lever (89) is moved momentarily out of the notch in auto-stop catch plate (80A) during the change cycle. This action removes all restraints from the various parts of the mechanism, and the cycle is completed in the normal way. However, if no records have been loaded onto the changer, and if record balancing arm (1) remains dropped as far as it will go, tone arm return lever (89) will not be released. The tone arm will again return to its rest, and the machine will shut off at the end of the cycle.



## ADJUSTMENTS

### Record Balancing Arm Height

1. Place a 45-rpm adapter over the regular spindle.
2. Place a 45-rpm record over the adapter.
3. Swing record balancing arm (1) to the left until it rests against the side of the record. The edge of the record should be approximately in the center of the end of balancing arm (1).
4. If balancing arm (1) is so low that it almost slides under the record, turn balancing arm screw (1A) --at the rear of the balancing arm (1)--counter-clockwise.

### Record Dropping

This adjustment should not be necessary unless the changer has been dismantled to make replacements. To adjust:

1. Remove all records, and switch off the power.
2. Loosen the hex head screw--underneath main drive gear (104)--two or three turns.
3. Move the Start-Stop-Reject control to Start.
4. Turn main drive gear (104) by hand until record dropping lever (164) is moved as far as it will go. The roller underneath main drive gear (104) will then be behind and covered by operating bar (91).
5. Securely tighten the hex screw underneath main drive gear (104).
6. Turn on the changer and test it with a full load of 12-inch records.

### Automatic Trip

The velocity trip mechanism is extremely sensitive. Therefore, no adjustment is provided. The only probable cause of failure would be if the curved end of trip feed lever (67) had been accidentally bent. If so, the end of striker arm (102) would not be able to work freely in the aperture in the side of the die-cast housing carrying the turntable bearing, etc. Trip feed lever (67) and striker arm (102) must both be absolutely free of their respective pivots. The long pin on the front of tone arm tripping arm (24) must always lie within the forked end of trip feed lever (67).

### Tone Arm Height

Tone arm lift pin (23) pushes upward on lift cantilever (19A). Lift cantilever (19A), in turn, pushes upward on height adjusting screw (18A). This action raises the tone arm during the change cycle. The tone

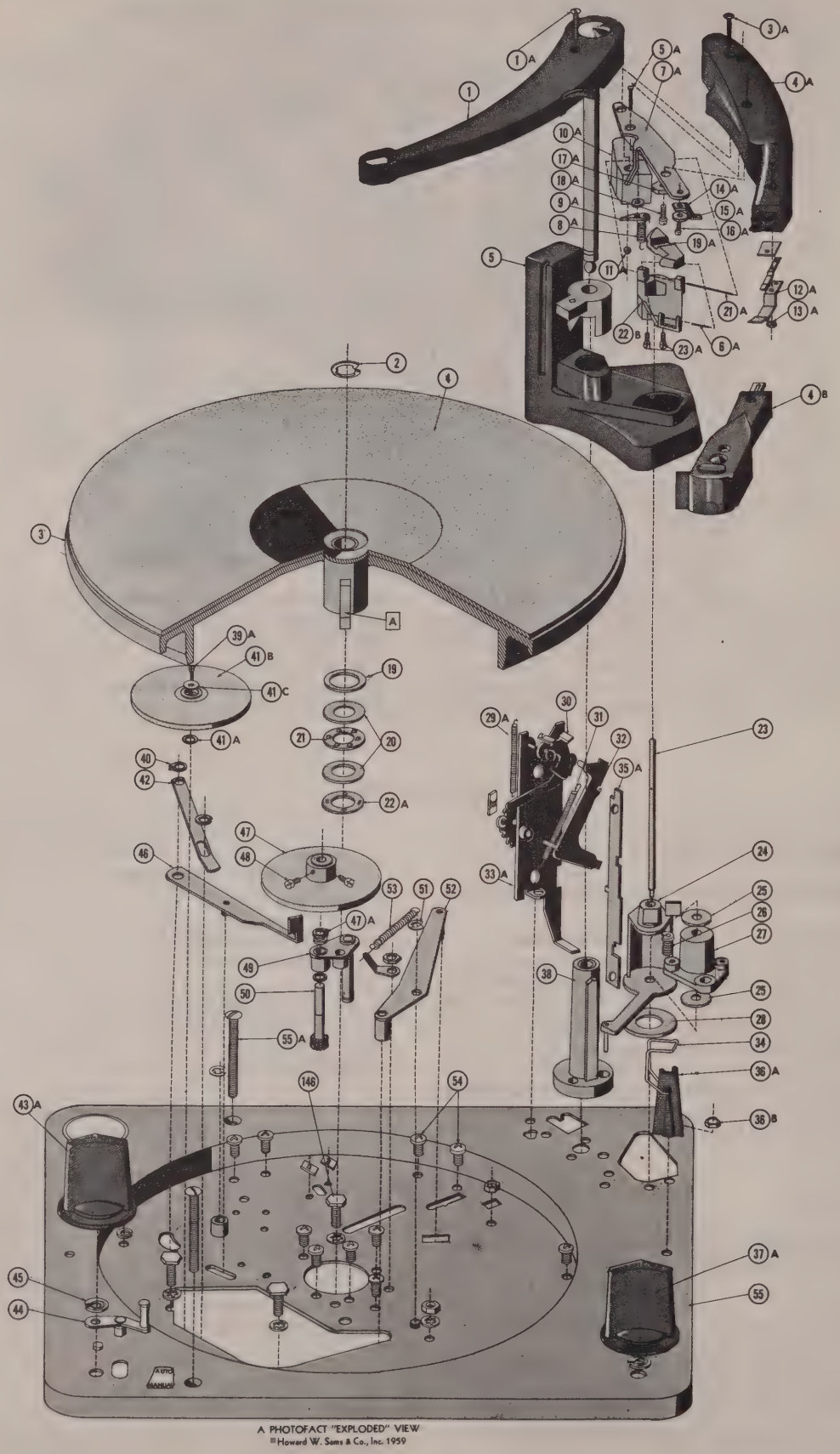



FIG. 4A EXPLODED VIEW OF PARTS ABOVE BASEPLATE

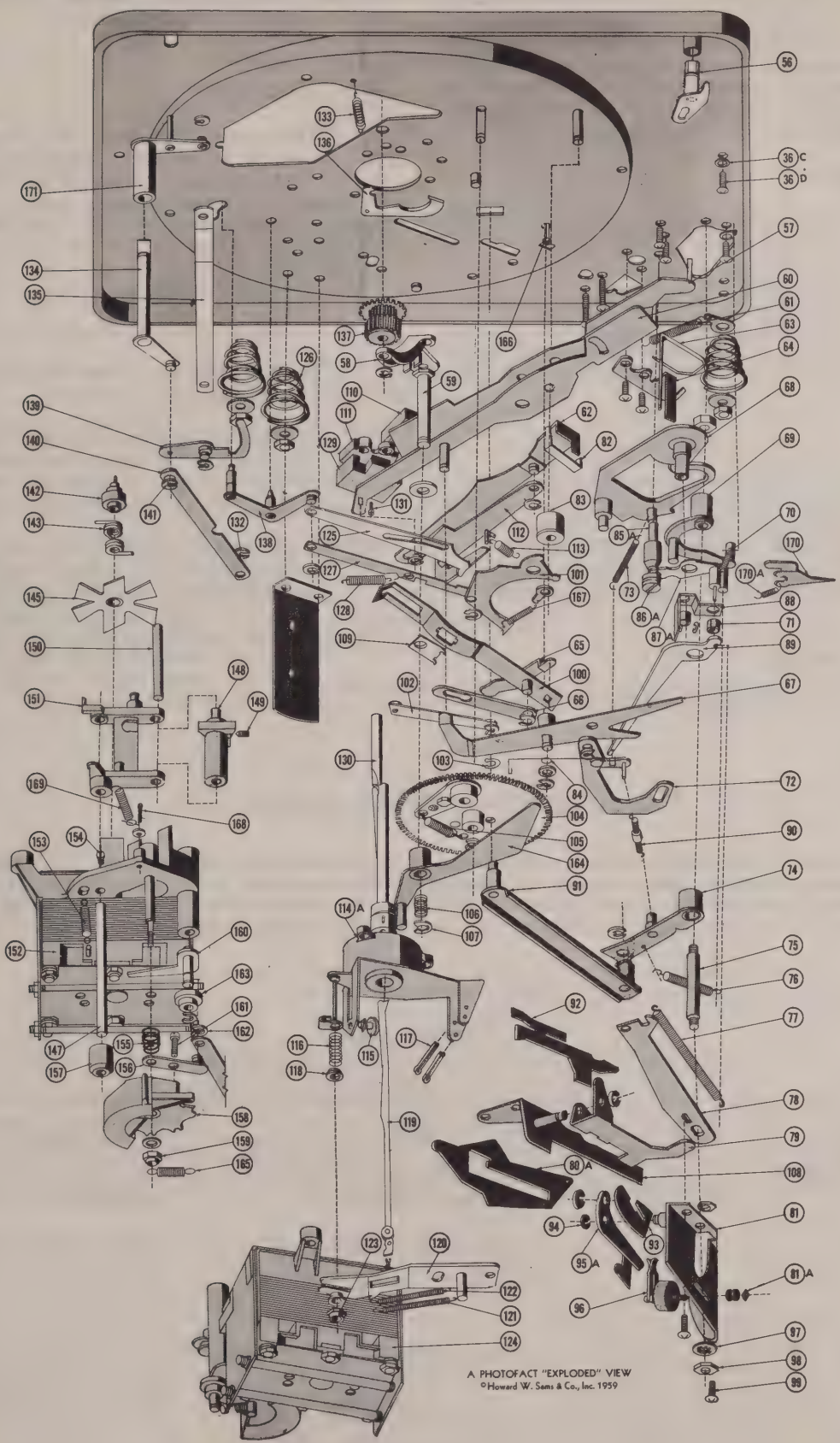



FIG. 4B EXPLODED VIEW OF PARTS BELOW BASEPLATE

arm height can be adjusted by screw (18A), through the small hole on top of the tone arm. To adjust, switch off the power just as the tone arm--during the change cycle--has just swung out over its rest. Turn height adjusting screw (18A) inward to raise the tone arm; outward to lower it. The adjustment is correct when the tone arm clears the top of the tone arm rest by approximately 1/ 8 inch and the top of the tone arm just clears the bottom record on the spindle.

## Needle Pressure

Check the needle pressure with a gram scale. The needle pressure should not be less than seven nor more than nine grams.

The needle pressure is determined by counterweight (10A) and counterbalance spring (8A). To vary the pressure, turn needle pressure adjustment screw (5A). This screw is accessible from the top of the tone arm.

## Muting

Loosen nut (81A). Slide the muting switch assembly in its slot. Position the switch until, with the machine turned off, the blades are separated by the insulating material. Tighten nut (81A). Check to see that the blade springs firmly, contacting the noninsulated part of lift pin and muting switch actuating lever (95A).

## Tone Arm Tracking

The amount of friction controlling the horizontal movement of the tone arm during the change cycle is determined by the adjustment of spacer (71). Before making this adjustment, also see that the tone arm is not restricted by the pickup leads.

## Tone Arm Setdown

If the setdown is erratic, first see that the tone arm is mounted securely. Check weight securing screw (3A) and nut (11A) (on the Exploded View) for looseness. If the mounting is secure, the probable cause of erratic setdown will be weakening or displacement of spring (70), or incorrect adjustment of spacer (71).

To adjust the tone arm setdown:

1. Allow the changer to shut off automatically, and clip the tone arm to its rest.

2. Press down gently on the rear of the tone arm. Adjust spacer (71) until pressure lever no longer exerts any pressure against the shoulder of the brass sleeve of tone arm positioning plate (68).

NOTE: When the adjustment is correct, the full pressure of spring (70) will be transmitted to felt clutch washer (28) during the change cycle. This will give enough frictional control to insure accurate positioning of the tone arm. However, the friction must be completely released at the end of the change cycle, so that the needle can freely follow the record groove.

# MAINTENANCE OF MOTOR AND TURNTABLE DRIVE

No lubrication of the motor is necessary because it has self-oiling bearings. Occasionally remove the turntable and wipe its inner rim, and the driving surfaces of the motor pulley and idler wheels, with a clean solvent-moistened rag. If necessary, clean the thrust washers and ball race under the turntable with a petroleum solvent; then relubricate them with a small amount of light machine oil.

# TROUBLE CHART

| Symptom | Cause | Remedy |
|---|---|---|
| Incorrect speed. | 1. Self-aligning bearing of motor misaligned. | 1. Tap motor with screwdriver while motor is running. |
| | 2. Ball race bearing (21) binds. | 2. Clean and relubricate ball race bearing (21) with light machine oil. Also oil the inside of the turntable hub if it appears dry. |
| | 3. Engagement between idler wheel and turntable slipping. If turntable can be turned by hand while the motor is running, check for oil on the idler wheel and the inside of the turntable rim. | 3. Clean the idler wheel and the inside of the turntable rim with carbon tetrachloride. |

## TROUBLE CHART (con't.)

| Symptom | Cause | Remedy |
|---|---|---|
| | 4. Idler wheel tension spring (169) has lost some of its tension. | 4. Increase the tension by removing several turns from spring (169). |
| | 5. Rubber idler wheel drags on adjacent step of motor pulley (142). | 5. Adjust height of idler wheel by turning locknut (159), under speed control cam (158), until the idler wheel is centered on each step of motor pulley (142) as the speed selector is moved. |
| | 6. Needle pressure more than 9 grams. | 6. See "Needle Pressure Adjustment." |
| 45-rpm records fail to drop. | 1. 45-rpm adapter not fully seated. | 1. Reposition 45-rpm adapter. |
| | 2. Spindle body (130) bent. | 2. Bend spindle body (130) until properly aligned. Be careful not to bend the top section too far. |
| Needle skips grooves, or sticks in grooves. | 1. Needle pressure not properly adjusted. | 1. See "Needle Pressure Adjustment." |
| | 2. Needle worn, bent, or clogged with lint, dirt, etc. | 2. Replace needle if worn or bent; clean needle if clogged. |
| | 3. Tone arm does not move freely because the pickup leads are too tight. | 3. Loosen the pickup leads until tone arm can move freely. |
| | 4. Automatic trip lever (52) bent, or has burrs on it. | 4. Straighten automatic trip lever (52), or file off the burrs. |
| Rejects prematurely. | 1. Changer not level. | 1. Level changer with a level. |
| | 2. Excessive friction between trip feed lever (67) and striker arm (102). | 2. Remove any dirt or other foreign matter from trip feed lever (67) and striker arm (102). |
| | 3. Rubber roller on striker arm (102) binds. | 3. Free rubber roller. |
| Tone arm drags across record. | 1. Needle broken, missing, or bent. | 1. Replace needle. |
| Noise while record is playing. | 1. Noisy motor. | 1. Clean and lubricate motor bearings. |
| | 2. Defective turntable ball bearings; missing balls. | 2. Replace balls. |
| | 3. Defective record. | 3. Do not use that record. |
| No sound. | 1. Defective cartridge. | 1. Replace cartridge. |
| | 2. Cartridge disconnected. | 2. Replace connection, and solder. |
| | 3. Cartridge leads open. | 3. Replace leads. |
| | 4. Muting switch (96) shorted. | 4. Remove short. |

## TROUBLE CHART (con't.)

| Symptom | Cause | Remedy |
|---|---|---|
| Distorted sound. | 1. Worn or defective needle. | 1. Replace needle. |
| | 2. Defective cartridge. | 2. Replace cartridge. |
| | 3. Incorrect needle pressure. | 3. Adjust needle pressure (see Needle Pressure Adjustment"). |
| Tone arm does not clear a one-inch stack of records. | 1. Tone arm height incorrect. | 1. Adjust height of tone arm (see "Tone Arm Height Adjustment"). |
| Incorrect or erratic tone arm setdown. | 1. Tone arm setdown adjustment incorrect. | 1. Adjust tone arm (see "Tone Arm Setdown Adjustment"). |

## MECHANICAL PARTS LIST

| Ref. No. | Part No. | Description |
|---|---|---|
| 1 | 56-1 | Record Balancing Arm |
| 2 | 56-2 | Turntable Retainer |
| 3 | 56-3 | Turntable Assembly(Model TSC-840) 6 lbs - 12" Turntable Assembly (Model TC99) |
| 3A | 56-3A | Weight Securing Screw |
| 4 | 56-4 | Rubber Mat (Model TSC-840) Rubber Mat (Model TC-99) |
| 4A | 56-4A | Tone Arm Shell |
| 4B | 56-4B | Plug-in Shell |
| 5 | 56-5 | Tone Arm Base And Setdown Selector Housing |
| 5A | 56-5A | Needle Pressure Adjustment Screw |
| 7A | 56-7A | Mounting Plate |
| 8A | 56-8A | Needle Pressure Adjustment Spring |
| 9A | 56-9A | Needle Pressure Adjustment Tab |
| 10A | 56-10A | Counterweight |
| 11A | 56-11A | 4 B.A. Nut |
| 12A | 56-12A | Retaining Clip |
| 13A | 56-13A | Retaining Nut |
| 14A | 56-14A | Lead Retaining Clip |
| 15A | 56-15A | 6 B.A. Washer |
| 16A | 56-16A | 6 B.A. x 3/16" Screw |
| 17A | 56-17A | Height Adjusting Locknut |
| 18A | 56-18A | Height Adjusting Screw |
| 19 | 56-19 | Rubber Washer |
| 19A | 56-19A | Lift Cantilever |
| 20 | 56-20 | Turntable Bearing Washers(Steel) |
| 21 | 56-21 | Bearing (Ball Race) |
| 21A | 56-21A | Horizontal Pivot Pin |
| 22A | 56-22A | Turntable Washer (Steel) |
| 22B | 56-22B | Mounting Bracket |
| 23 | 56-23 | Tone Arm Lift Pin |
| 23A | 56-23A | Tone Arm Swivel Screws |
| 24 | 56-24 | Tone Arm Tripping Arm |
| 25 | 56-25 | Flat Washer (Steel) |
| 26 | 56-26 | Lift Pin Lift Spring |
| 27 | 56-27 | Tone Arm Mounting Base |
| 28 | 56-28 | Clutch Washer (Felt) |
| 29A | 56-29A | Record Gate Finger Lift Spring |
| 30 | 56-30 | Record Gate Cam And Finger |
| 31 | 56-31 | Record Gate Lever Actuating Spring |
| 32 | 56-32 | Record Gate Lever |
| 33A | 56-33A | Record Gate Ass'y. Mtg. Brkt. |
| 34 | 56-34 | Lock Assembly |

| Ref. No. | Part No. | Description |
|---|---|---|
| 35A | 56-35A | Setdown Positioning Lever |
| 36A | 56-36A | Rest Post |
| 36B | 56-36B | Rest Post Nut |
| 36C | 56-36C | Rest Post Washer |
| 36D | 56-36D | Rest Post Screw |
| 37 | 56-37 | Start-Stop-Reject Knob (Model TSC-840) |
| 37A | 56-37A | Start-Stop-Reject Knob (Model TC-99) |
| 38 | 56-38 | Balancing Arm Column |
| 39A | 56-39A | Motor Idler Wheel Screw |
| 40 | 56-40 | "C" Washer |
| 41A | 56-41A | Washer |
| 41B | 56-41B | * Motor Idler Wheel |
| 41C | 56-41C | Washer |
| 42 | 56-42 | Idler Wheel Retracting Link |
| 43 | 56-43 | Speed Control Knob(Model TSC-840) |
| 43A | 56-43A | Speed Control Knob(Model TC-99) |
| 44 | 56-44 | Auto-Manual Lever |
| 45 | 56-45 | "C" Washer |
| 46 | 56-46 | Cycle Delay Lever |
| 47 | 56-47 | * Cycle Drive Wheel |
| 48 | 56-48 | Drive Wheel Mtg. Screws |
| 49 | 56-49 | Drive Wheel Swing Bracket |
| 50 | 56-50 | Drive Wheel Mtg. Shaft And Gear |
| 51 | 56-51 | "C" Washer |
| 52 | 56-52 | Automatic Trip Lever |
| 53 | 56-53 | Automatic Stop Lever Spring |
| 54 | 56-54 | Screw |
| 55 | 56-55 | Baseplate |
| 56 | 56-56 | Start-Stop-Reject Shaft And Cam |
| 57 | 56-57 | Reject Lever |
| 58 | 56-58 | Dropping Stud Stabilizing |
| 59 | 56-59 | Record Dropping Lever Mtg. Stud |
| 60 | 56-60 | Stop Lever |
| 61 | 56-61 | Idler Wheel Actuating Link |
| 62 | 56-62 | Switch-off Link |
| 63 | 56-63 | Setdown Selector Wire |
| 64 | 56-64 | Selector Wire Mounting Brkt. |
| 65 | 56-65 | Manual Stop Actuating Lever |
| 66 | 56-66 | Spindle Deactivating Link |
| 67 | 56-67 | Trip Feed Lever |
| 68 | 56-68 | Tone Arm Positioning Plate |
| 69 | 56-69 | Tone Arm Lateral Lever |
| 70 | 56-70 | Spring |
| 71 | 56-71 | Spacer |

| Ref. No. | Part No. | Description |
|---|---|---|
| 72 | 56-72 | Record Gate Reset Lever |
| 73 | 56-73 | Positioning Plate Spring |
| 74 | 56-74 | Tone Arm Actuating Lever |
| 75 | 56-75 | Mounting Stud |
| 76 | 56-76 | Spring |
| 77 | 56-77 | Tone Arm Return Lever Spring |
| 78 | 56-78 | Strengthener |
| 79 | 56-79 | Auto-Stop Lever |
| 80A | 56-80A | Auto-Stop Catch Plate |
| 81 | 56-81 | Muting Switch Mtg. Bracket |
| 82 | 56-82 | Switch-off Link Pivot Bracket |
| 83 | 56-83 | Spacer |
| 84 | 56-84 | Spring |
| 85A | 56-85A | Pressure Lever Adj. Screw |
| 86A | 56-86A | Spacer |
| 87A | 56-87A | Pressure Lever |
| 88 | 56-88 | Lift Pin Mtg. Bracket |
| 89 | 56-89 | Tone Arm Return Lever |
| 90 | 56-90 | Spring |
| 91 | 56-91 | Operating Bar |
| 92 | 56-92 | Switch-off Plate |
| 93 | 56-93 | Lift Pin And Muting Switch Actuating Link |
| 94 | 56-94 | "C" Washer |
| 95A | 56-95A | Lift Pin And Muting Switch Actuating Lever Assembly |
| 96 | 56-96 | Muting Switch Assembly |
| 97 | 56-97 | Lockwasher |
| 98 | 56-98 | Hex Nut |
| 99 | 56-99 | Screw |
| 100 | 56-100 | Spindle Deactivating Lever |
| 101 | 56-101 | Switch-off Lever |
| 102 | 56-102 | Striker Arm |
| 103 | 56-103 | "C" Washer |
| 104 | 56-104 | Main Drive Gear |
| 105 | 56-105 | Main Drive Gear Spring |
| 106 | 56-106 | Compression Spring |
| 107 | 56-107 | "C" Washer |
| 108 | 56-108 | Auto-Stop Lever Mtg. Bracket |
| 109 | 56-109 | Spindle Deactivating Slide Plate |
| 110 | 56-110 | Switch Actuating Cam |
| 111 | 56-111 | On-Off Switch |
| 112 | 56-112 | Switch-off Link |
| 113 | 56-113 | Switch-off Link Spring |
| 114A | 56-114A | Turntable Axle |
| 115 | 56-115 | Record Dropping Adj. Screw |
| 116 | 56-116 | Compression Spring |
| 117 | 56-117 | Cotter Key |
| 118 | 56-118 | Shoulder Washer |
| 119 | 56-119 | Record Selector Pawl |
| 120 | 56-120 | Spindle Slide Plate |

| Ref. No. | Part No. | Description |
|---|---|---|
| 121 | 56-121 | Selector Pawl Return Spring |
| 122 | 56-122 | Spindle Slide Plate Return Spring |
| 123 | 56-123 | Locknut |
| 124 | 56-124 | Motor Assembly |
| 125 | 56-125 | Idler Wheel Actuating Link |
| 126 | 56-126 | Mounting Spring (3) |
| 127 | 56-127 | Switch Pawl |
| 128 | 56-128 | Switch And Idler Wheel Actuating Spring |
| 129 | 56-129 | Switch Cover |
| 130 | 56-130 | Spindle Body |
| 131 | 56-131 | Screw |
| 132 | 56-132 | "C" Washer |
| 133 | 56-133 | Cycle Drive Wheel Actuating Spring |
| 134 | 56-134 | Speed Control Crank |
| 135 | 56-135 | Auto And Manual Actuating Link |
| 136 | 56-136 | Main Gear Release Lever |
| 137 | 56-137 | Intermediate Cycling Gear |
| 138 | 56-138 | Idler Wheel Actuating Lever |
| 139 | 56-139 | Auto And Manual Actuating Lever |
| 140 | 56-140 | Speed Control Lever |
| 141 | 56-141 | "C" Washer |
| 142 | 56-142 | Motor Pulley |
| 143 | 56-143 | Coupling Spring |
| 145 | 56-145 | Fan |
| 146 | 56-146 | Motor Screws (3) |
| 147 | 56-147 | Spindle |
| 148 | 56-148 | Idler Swivel Arm |
| 149 | 56-149 | Swivel Arm Set Screw |
| 150 | 56-150 | Idler Slide Arm Spindle |
| 151 | 56-151 | Idler Slide Arm |
| 152 | 56-152 | Motor |
| 153 | 56-153 | Slide Arm Return Spring |
| 154 | 56-154 | Slide Arm Set Screw |
| 155 | 56-155 | Compression Spring |
| 156 | 56-156 | Speed Control Link |
| 157 | 56-157 | Thrust Collar |
| 158 | 56-158 | Speed Control Cam |
| 159 | 56-159 | Locknut |
| 160 | 56-160 | Cam Lever |
| 161 | 56-161 | Control Link Mtg. Screw |
| 162 | 56-162 | "C" Washer |
| 163 | 56-163 | Cam Index Roller |
| 164 | 56-164 | Record Dropping Lever |
| 165 | 56-165 | Index Spring |
| 166 | 56-166 | Mounting Stud |
| 167 | 56-167 | Switch-off Lever Spring |
| 168 | 56-168 | Cotter Key |
| 169 | 56-169 | Idler Wheel Tension Spring |
| 170 | 56-170 | Automatic Lever |
| 170A | 56-170A | Spring |

* Item 41B - Motor Idler Wheel : WALSCO Part No. 1449
* Item 47 - Cycle Drive Wheel : WALSCO Part No. 1491-1

PHOTOFACT* Folder

EIA

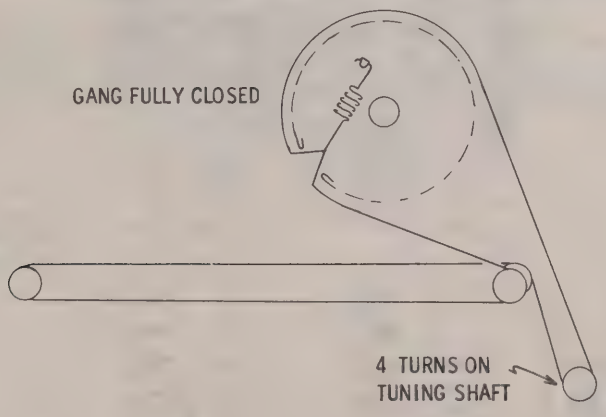
**DELMONICO**
**MODEL 7XF3**

DELMONICO
MODEL 7XF3

DELMONICO
MODEL 7XF3

| | | | |
|---|---|---|---|
| TRADE NAME | Delmonico Model 7XF3 | | |
| MANUFACTURER | Delmonico International Corp., 42-24 Orchard St., Long Island City 1, N. Y. | | |
| TYPE SET | AC-DC Operated 7 Tube FM-AM Receiver | | |
| POWER SUPPLY | 110-120 Volts AC-DC | RATING | 28 Watts, .33 Amp. @ 117 Volts AC |
| TUNING RANGE | BROADCAST 535 - 1605KC | FREQ. MOD. | 88 - 108MC |

## DIAL CORD STRINGING




**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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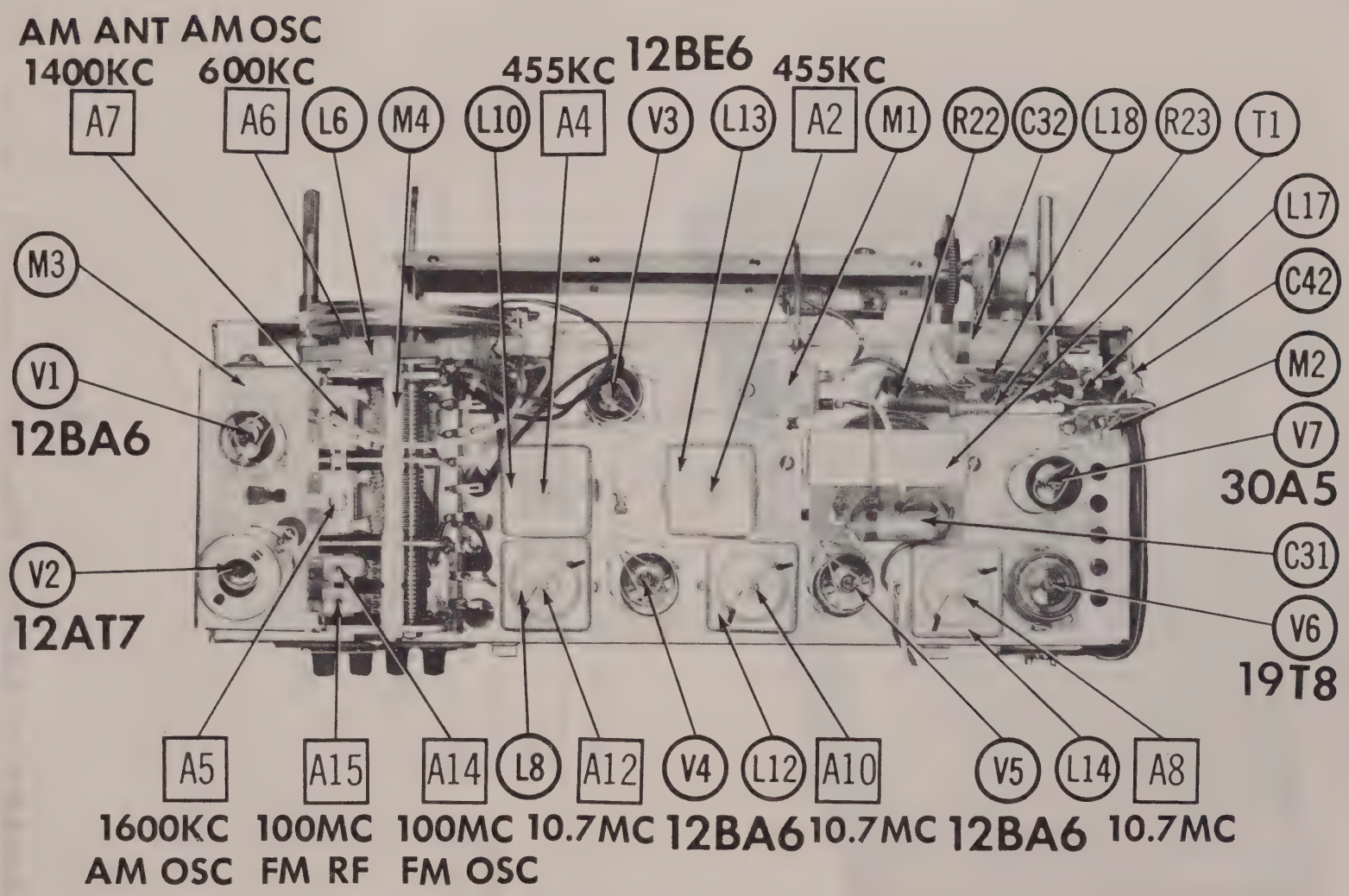



CHASSIS TOP VIEW

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A6, A8 thru A13 ... GENERAL CEMENT #8721, 8722
WALSCO #2519
A5, A7 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A14, A15 ..... GENERAL CEMENT #9087, 9089
WALSCO #2528

AM ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .1mfd | High side to pin 7 (grid) of AM Converter. Low side to chassis. | 455KC (400∿ Mod.) | AM | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | | Loop | 1600KC | " | 1600KC | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 600KC | " | 600KC | " | A6 | " |
| 4. | | " | 1400KC | " | Tune to 1400KC signal | " | A7 | Adjust for maximum output while rocking tuning gang. |

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 5. | .001mfd | High side to pin 7 (grid) of FM Mixer. Low side to chassis. | 10.7MC (Unmod.) | FM | Point of non-interference | DC probe thru 100K to point Ⓐ. Common to chassis. | A8, A9, A10, A11, A12. | Adjust for maximum deflection. |
| 6. | " | " | " | " | " | DC probe thru 100K to point Ⓑ. Common to point Ⓒ. | A13 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 5. | .001mfd | High side to pin 7 (grid) of FM Mixer. Low side to chassis. | 10.7MC (450KC Swp.) | FM | Point of non-interference | Vert. Amp. thru 100K to point Ⓐ. Low side to chassis. | A8, A9, A10, A11, A12 | Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry similar to Fig. 1. Reconnect C3. |
| 6. | " | " | " | " | " | Vert. Amp. thru 100K to point Ⓑ. Low side to chassis. | A13 | Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines. |

FM RF ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 7. | 270Ω Carbon Resistor | Across FM antenna terminals with 270Ω in high side. | 100MC (Unmod.) | FM | 100MC | DC probe thru 100K to point Ⓐ. Common to chassis. | A14, A15 | Adjust for maximum deflection. |

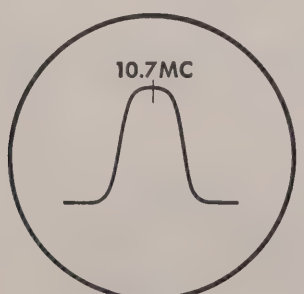


FIG. 1

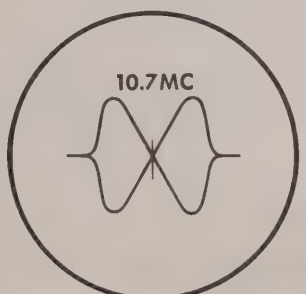
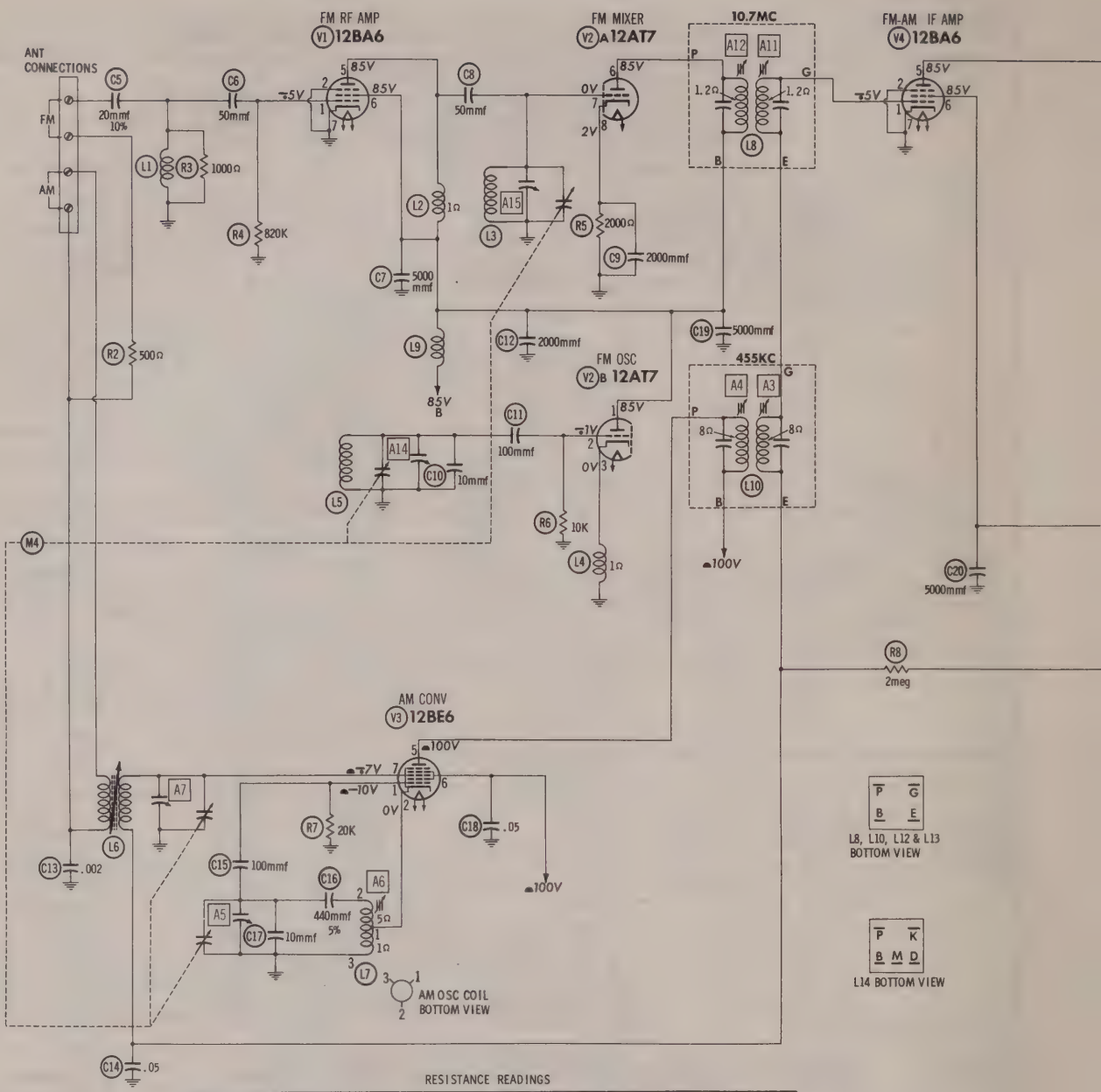


FIG. 2




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 12BA6 | 820K | 0Ω | 12Ω | 0Ω | †1000Ω | †1000Ω | 0Ω | | |
| V2 | 12AT7 | †1000Ω | 10K | 1Ω | 12Ω | 24Ω | †1000Ω | 0Ω | 2000Ω | 18Ω |
| V3 | 12BE6 | ▲20K | ▲1Ω | 67Ω | 79Ω | ▲†1000Ω | ▲†1000Ω | ▲2.5meg | | |
| V4 | 12BA6 | 2.5meg | 0Ω | 24Ω | 36Ω | †1000Ω | †1000Ω | 0Ω | | |
| V5 | 12BA6 | 100K | 0Ω | 36Ω | 48Ω | †6000Ω | †6000Ω | 0Ω | | |
| V6 | 19T8 | 530K | 30K | 530K | 48Ω | 67Ω | 500K | 0Ω | 5meg | †300K |
| V7 | 30A5 | 150Ω | 500K | 79Ω | 109Ω | 500K | †1000Ω | †470Ω | | |

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
▲ MEASURED IN "AM" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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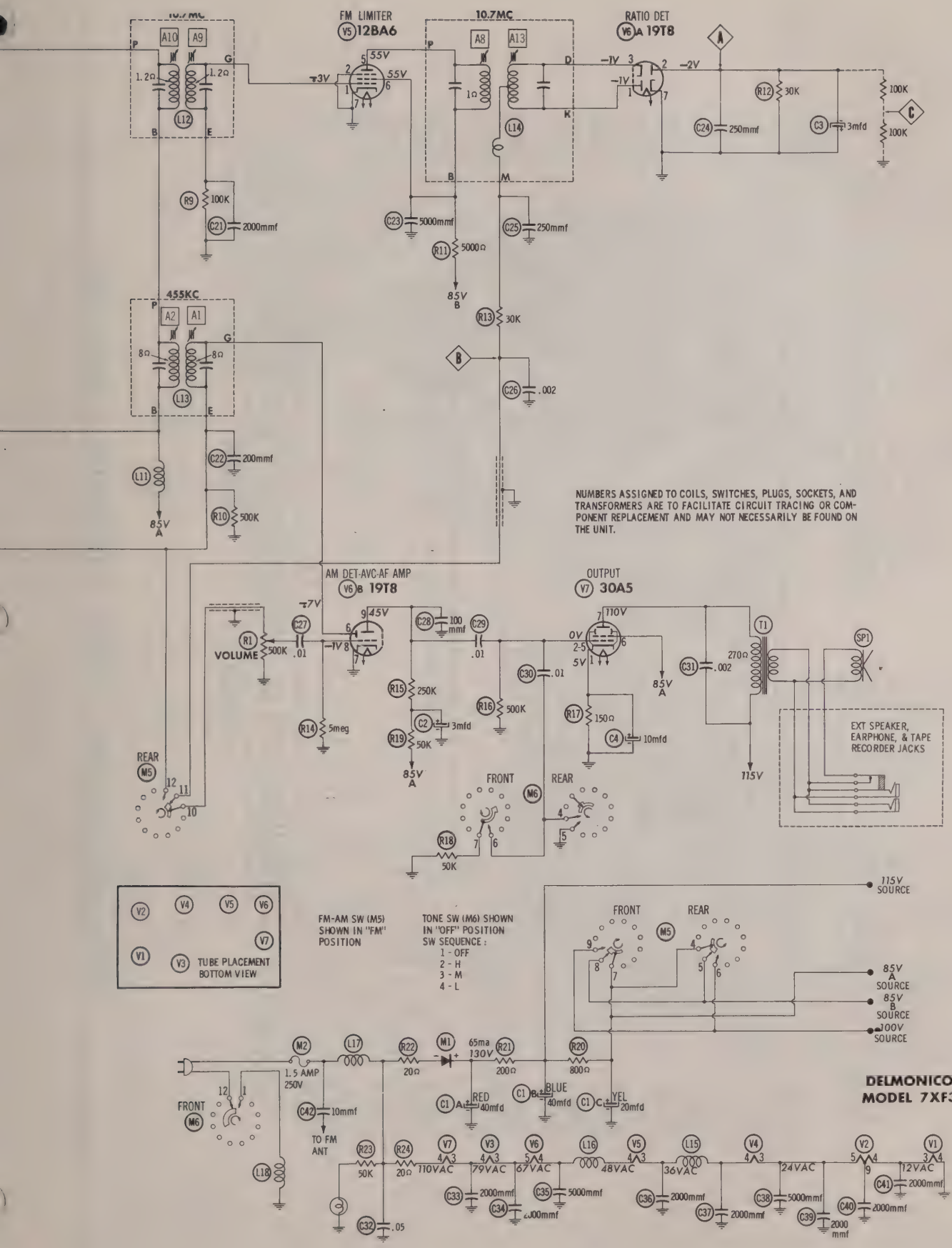
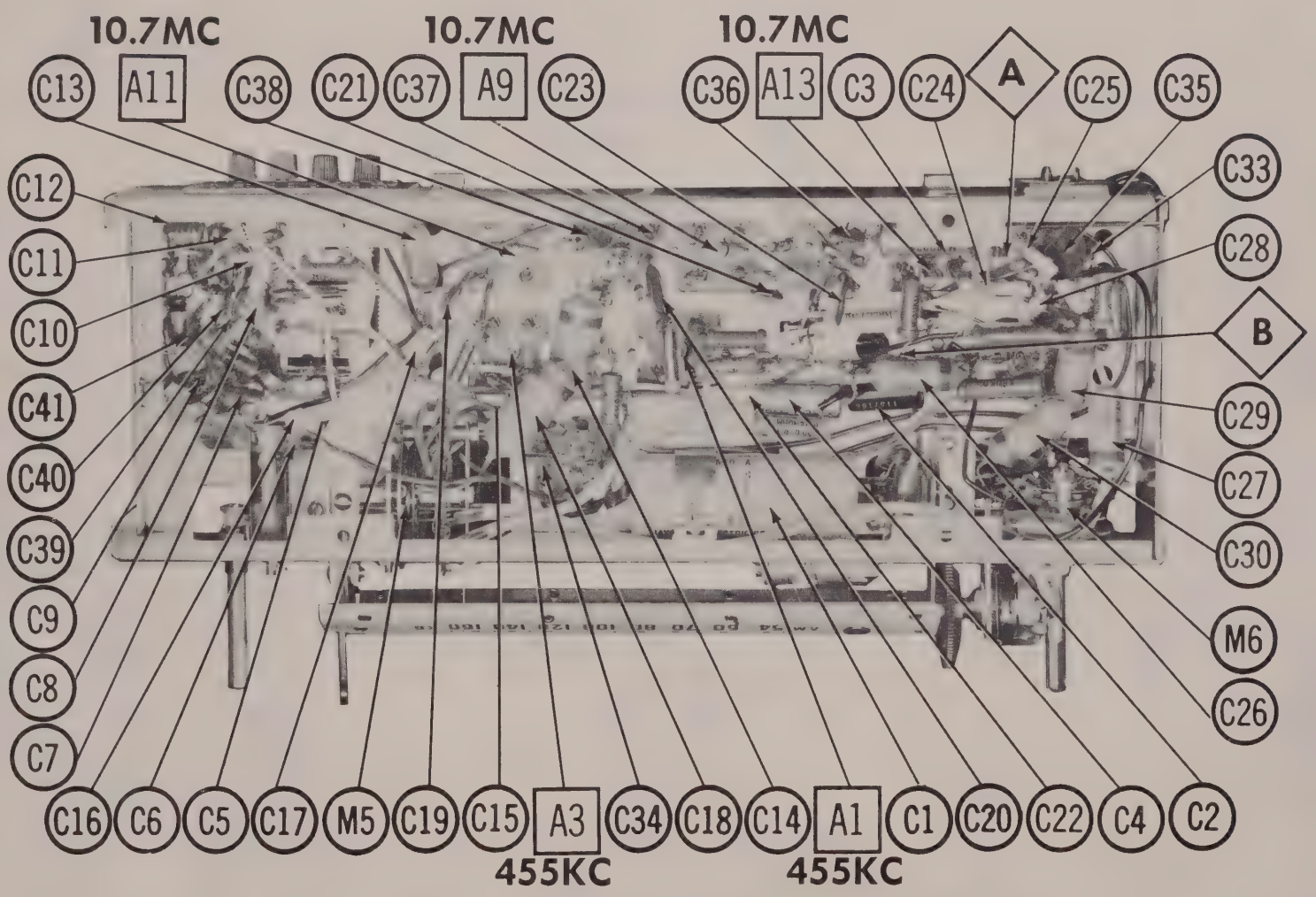

FM LIMITER
V5 12BA6
10.7MC
RATIO DET
V6A 19T8
455KC
A10
A9
A8
A13
A2
A1
L12
L14
L13
L11
R9 100K
C21 2000mmf
C23 5000mmf
C25 250mmf
R11 5000Ω
85V B
R13 30K
C26 .002
C22 200mmf
R10 500K
85V A
R12 30K
C24 250mmf
C3 3mfd
100K
100K
-1V
-2V
+3V
55V
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
AM DET-AVC-AF AMP
V6B 19T8
OUTPUT
V7 30A5
+7V
45V
110V
0V
5V
R1 VOLUME 500K
C27 .01
C28 100 mmf
C29 .01
C30 .01
R15 250K
R16 500K
R14 5meg
C2 3mfd
R19 50K
R17 150Ω
C4 10mfd
C31 .002
270Ω
T1
SP1
115V
EXT SPEAKER, EARPHONE, & TAPE RECORDER JACKS
REAR
M5
FRONT
M6
REAR
R18 50K
V2 V4 V5 V6 V7 V1 V3 TUBE PLACEMENT BOTTOM VIEW
FM-AM SW (M5) SHOWN IN "FM" POSITION
TONE SW (M6) SHOWN IN "OFF" POSITION
SW SEQUENCE :
1 - OFF
2 - H
3 - M
4 - L
115V SOURCE
85V A SOURCE
85V B SOURCE
100V SOURCE
M2
L17
R22 20Ω
M1
65ma 130V
R21 200Ω
R20 800Ω
1.5 AMP 250V
C42 10mmf
TO FM ANT
L18
C1A RED 40mfd
C1B BLUE 40mfd
C1C YEL 20mfd
R23 50K
R24 20Ω
110VAC
79VAC
67VAC
48VAC
36VAC
24VAC
12VAC
C33 2000mmf
C34 2000mmf
C35 5000mmf
C36 2000mmf
C37 2000mmf
C38 5000mmf
C39 2000 mmf
C40 2000mmf
C41 2000mmf
C32 .05
DELMONICO
MODEL 7XF3




CHASSIS BOTTOM VIEW - ALIGN, CAPACITOR, & MISC IDENT.

# PARTS LIST AND DESCRIPTIONS

## TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | FM RF Amplifier | 12BA6 |
| V2 | FM Mixer - Osc. | 12AT7 |
| V3 | AM Converter | 12BE6 |
| V4 | FM-AM IF Amplifier | 12BA6 |
| V5 | FM Limiter | 12BA6 |
| V6 | Ratio Detector-AM Det. AVC-AF Amplifier | 19T8 |
| V7 | Output | 30A5 |

## ELECTROLYTIC CAPACITORS

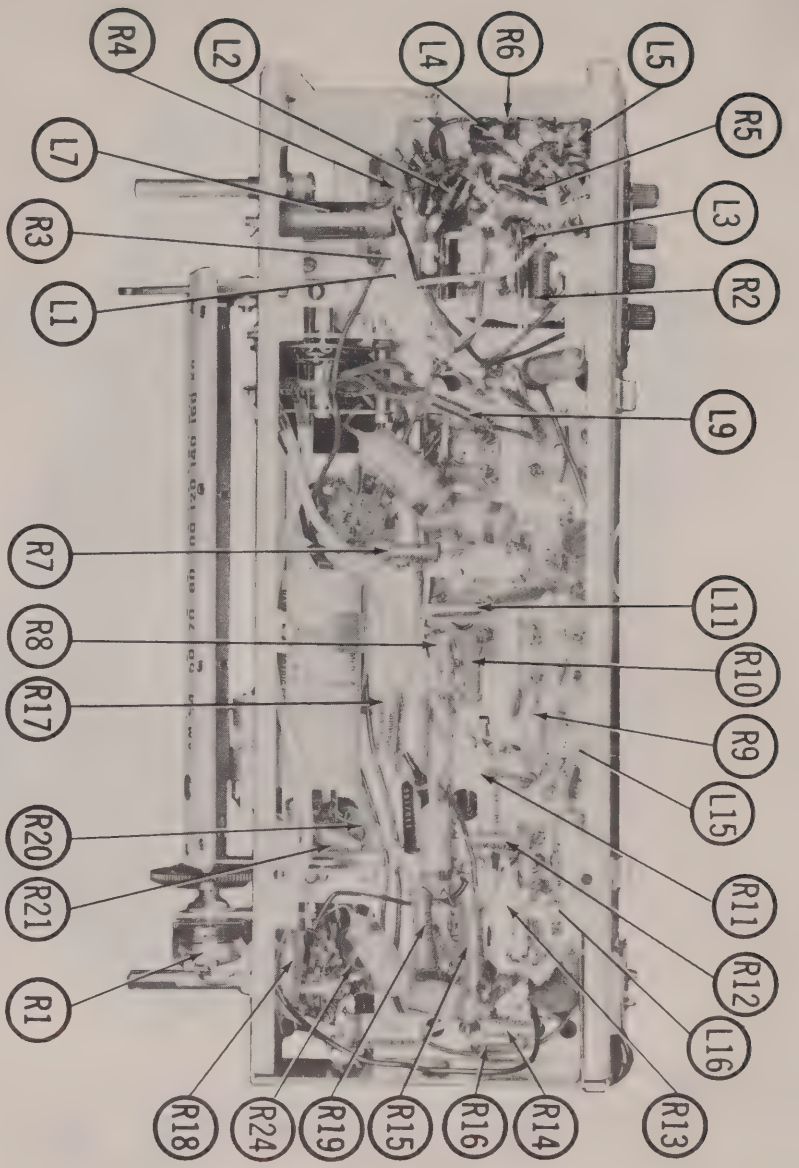
| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | DELMONICO PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1A | 40 | 150 | | PRS3650 | BBRT44215 | WT217 | TDLT-4 | TVA-3451 | |
| B | 40 | 150 | | | | | | | |
| C | 20 | 150 | | | | | | | |
| C2 | 3 | 150 | | SRE150V5 | NLW3-150 | TT150X3 | TD-4-150 | TE-1502 | |
| C3 | 3 | 120 | | SRE150V5 | NLW3-150 | TT150X3 | TD-4-150 | TE-1502 | |
| C4 | 10 | 50 | | SRE50V10 | NLW10-50 | TT50X10 | TD-10-50 | TE-1304 | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C5 | 20 10% | | | D6-200 | L10Q2 | CCD-200 | ZT-542 | 10TS-Q20 |
| C6 | 50 | | | D6-500 | L10Q5 | CCD-500 | UC-545 | 5GA-Q50 |
| C7 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C8 | 50 | | | D6-500 | L10Q5 | CCD-500 | UC-545 | 5GA-Q50 |
| C9 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C10 | 10 | | | D6-100 | L10Q1 | CCD-100 | UC-541 | 5GA-Q10 |
| C11 | 100 | | | D6-101 | L10T1 | CCD-101 | UC-531 | 5GA-T10 |
| C12 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C13 | .002 400V | | P488N-002 | D6-202 | CUB6D2 | 6DP-1-202 | GEM-622 | 6TM-D2 |
| C14 | .05 400V | | P488N-05 | DF-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S5 |
| C15 | 100 | | | D6-101 | L10T1 | CCD-101 | UC-531 | 5GA-T10 |
| C16 | 440 5% | | | | | CM-20B-431J | | MS-343 |
| C17 | 10 | | | D6-100 | L10Q1 | CCD-100 | UC-541 | 5GA-Q10 |
| C18 | .05 400V | | P488N-05 | DF-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S5 |
| C19 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C20 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C21 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C22 | 200 | | | D6-201 | L10T2 | CCD-201 | UC-532 | 5GA-T20 |
| C23 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C24 | 250 | | | D6-251 | L10T25 | CCD-251 | UC-5325 | 5GA-T25 |
| C25 | 250 | | | D6-251 | L10T25 | CCD-251 | UC-5325 | 5GA-T25 |
| C26 | .002 400V | | P488N-002 | D6-202 | CUB6D2 | 6DP-1-202 | GEM-622 | 6TM-D2 |
| C27 | .01 400V | | P488N-01 | D6-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 6TM-S1 |
| C28 | 100 | | | D6-101 | L10T1 | CCD-101 | UC-531 | 5GA-T10 |
| C29 | .01 400V | | P488N-01 | D6-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 4TM-S1 |
| C30 | .01 400V | | P488N-01 | D6-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 4TM-S1 |
| C31 | .002 400V | | P488N-002 | D6-202 | CUB6D2 | 6DP-1-202 | GEM-622 | 6TM-D2 |
| C32 | .05 400V | | P488N-05 | DF-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S5 |
| C33 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C34 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C35 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C36 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C37 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C38 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D5 |
| C39 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C40 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C41 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D2 |
| C42 | 10 | | | D6-100 | L10Q1 | CCD-100 | UC-531 | 5GA-Q10 |

# CHASSIS BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | DELMONICO PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1 | 500K | ½ | PR-5 | | | | | Volume |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R2 | 500Ω | |
| R3 | 1000Ω | |
| R4 | 820K | |
| R5 | 2000Ω | |
| R6 | 10K | |
| R7 | 20K | |
| R8 | 2meg | |
| R9 | 100K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R10 | 500K | |
| R11 | 5000Ω | |
| R12 | 30K | |
| R13 | 30K | |
| R14 | 5meg | |
| R15 | 250K | |
| R16 | 500K | |
| R17 | 150Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R18 | 50K | |
| R19 | 50K | |
| R20 | 800Ω | |
| R21 | 200Ω | |
| R22 | 20Ω | |
| R23 | 50K | |
| R24 | 20Ω | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | DELMONICO PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | FM Ant. Coil | L-308A | | | | | | |
| L2 | RF Choke | L-303 | 19-1004 | 19-1004 | BC-565 | 4610 | | 6uh |
| L3 | FM RF Coil | L-308B | | | | | | |
| L4 | Cathode Choke | L-303 | 19-1004 | 19-1004 | BC-565 | 4610 | | 6uh |
| L5 | FM Osc. Coil | L308C | | | | | | |
| L6 | Loopstick | | | | | | | |
| L7 | AM Osc. Coil | | 14-1055 | 14-1055 | | | | |
| L8 | 1st FM IF Trans. | T-850A | | | | | | |
| L9 | RF Choke | L-310 | 19-1001 | 19-1001 | BC-562 | 4604 | | 1.4uh |
| L10 | 1st AM IF Trans. | T-851A | | | | | | |
| L11 | RF Choke | L-310 | 19-1001 | 19-1001 | BC-562 | 4604 | | 1.4uh |
| L12 | 2nd FM IF Trans. | T-850B | | | | | | |
| L13 | 2nd AM IF Trans. | T-851B | | | | | | |
| L14 | Ratio Detector | T-846 | 17-3488 | 17-3488 | | | | |
| L15 | Fil. Choke | L-310 | 19-1001 | 19-1001 | BC-562 | 4604 | | 1.4uh |
| L16 | Fil. Choke | L-310 | 19-1001 | 19-1001 | BC-562 | 4604 | | 1.4uh |
| L17 | Line Choke | L-309 | | | | | | |
| L18 | Line Choke | L-309 | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | DELMONICO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 2400Ω | 5-6Ω | T-343 | 24S64 | A-2902 | AU-604 | A-3849 | 24S64 | S-53X | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | DELMONICO PART No. | QUAM PART No. | |
| SP1 | 4" x 6" | PM | 5-6Ω | PM-643A | 46A15 | |

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DELMONICO PART No. | FEDERAL PART No. | INTERNATIONAL PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .063A | ① | HA154 ② | SD-42 ② | K200 ② | SR200 ② | ① Selenium Type<br>② Silicon Type |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | DELMONICO PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | 3AG | 1.5A 250V | | | 31201.5 (3AG 1½A 250V) | 356001 | AGC1½ | 4405 |

## MISCELLANEOUS

| ITEM No. | PART NAME | DELMONICO PART No. | NOTES |
|---|---|---|---|
| M3 | RF Tuner | | 3 Gang (AM Sections: Ant. 22-476mmf, Osc. 26-480mmf) |
| M4 | Tuning Cap. | | |
| M5 | Switch | | Function Selector |
| M6 | Switch | | Off-Tone |

## CABINETS & CABINET PARTS

When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

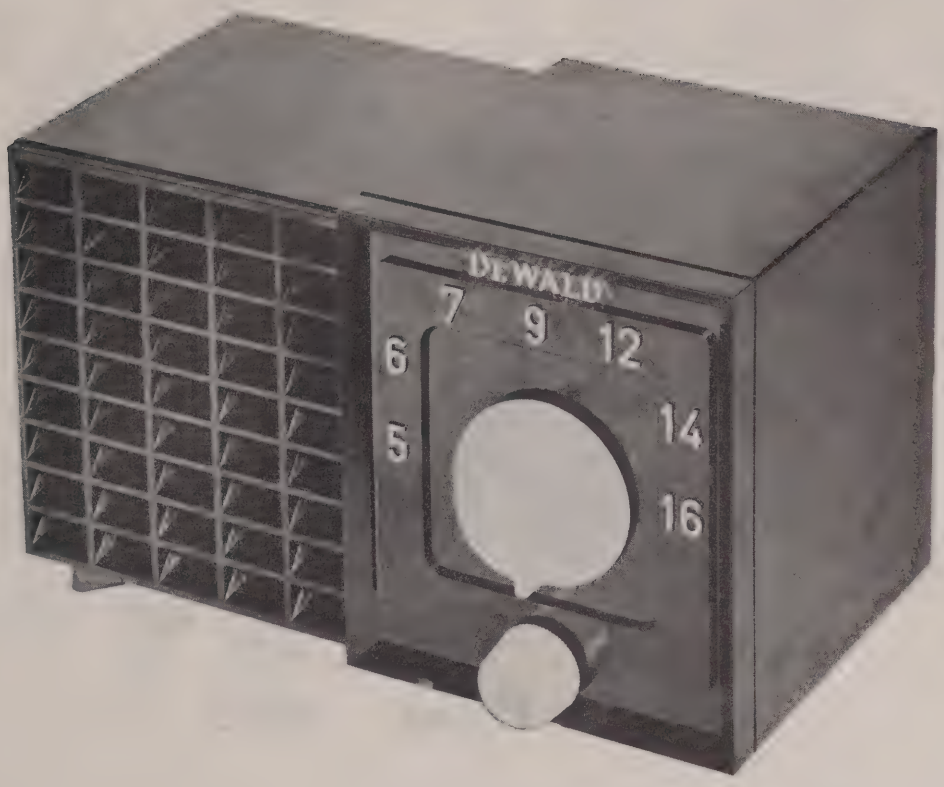
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

# DEWALD MODEL M-550

DEWALD MODEL M-550




DEWALD MODEL M-550

| | |
|---|---|
| TRADE NAME | DeWald Model M-550 |
| MANUFACTURER | DeWald Radio Mfg. Corp., 35-15 37th Ave., Long Island City 1, N. Y. |
| TYPE SET | AC-DC Operated 5 Tube AM Receiver |
| POWER SUPPLY | 105-125 Volts AC-DC |
| RATING | 26 Watts, .28 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 535 - 1700KC |

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | | Loop | 455KC (400~ Mod.) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 2. | | " | 1700KC | " | " | A5 | " |
| 3. | | " | 1400KC | 1400KC signal | " | A6 | " |

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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JG346



SET 464 FOLDER 8

# PARTS LIST AND DESCRIPTIONS

## TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | Converter | 12BE6 |
| V2 | IF Amplifier | 12BA6 |
| V3 | Det. - AVC - AF Amp. | 12AV6 |
| V4 | Output | 50C5 |
| V5 | Rectifier | 35W4 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | DEWALD PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1A | 30 | 150 | E-200-5 | PRS150V30-30 | BBRD3315 | TCD47 | TDLD-4 | TVA-2434 | |
| B | 30 | 150 | | | | | | | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C2 | .05 200V | | P288N-05 | DF-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S5 |
| C3 | .05 200V | | P288N-05 | DF-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S5 |
| C4 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S1 |
| C5 | .05 400V | | P488N-05 | DF-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S5 |
| C6 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 20P-3-104 | GEM-201 | 2TM-P1 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | DEWALD PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1A | 500K | ½ | 3046-8 | B-60-S | A47-500K-Z | Q13-133 | U-48 | Volume Note 1 |
| B | Shaft | | | Not Req. | KSS-3 | Not Req. | Not Req. | |
| C | Switch | | | Not Req. | SWE-12 | 76-1 | US-26 | Off-On |

Note 1. Some versions may use Part #3046-3.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R2 | 22K | |
| R3 | 2.2meg | |

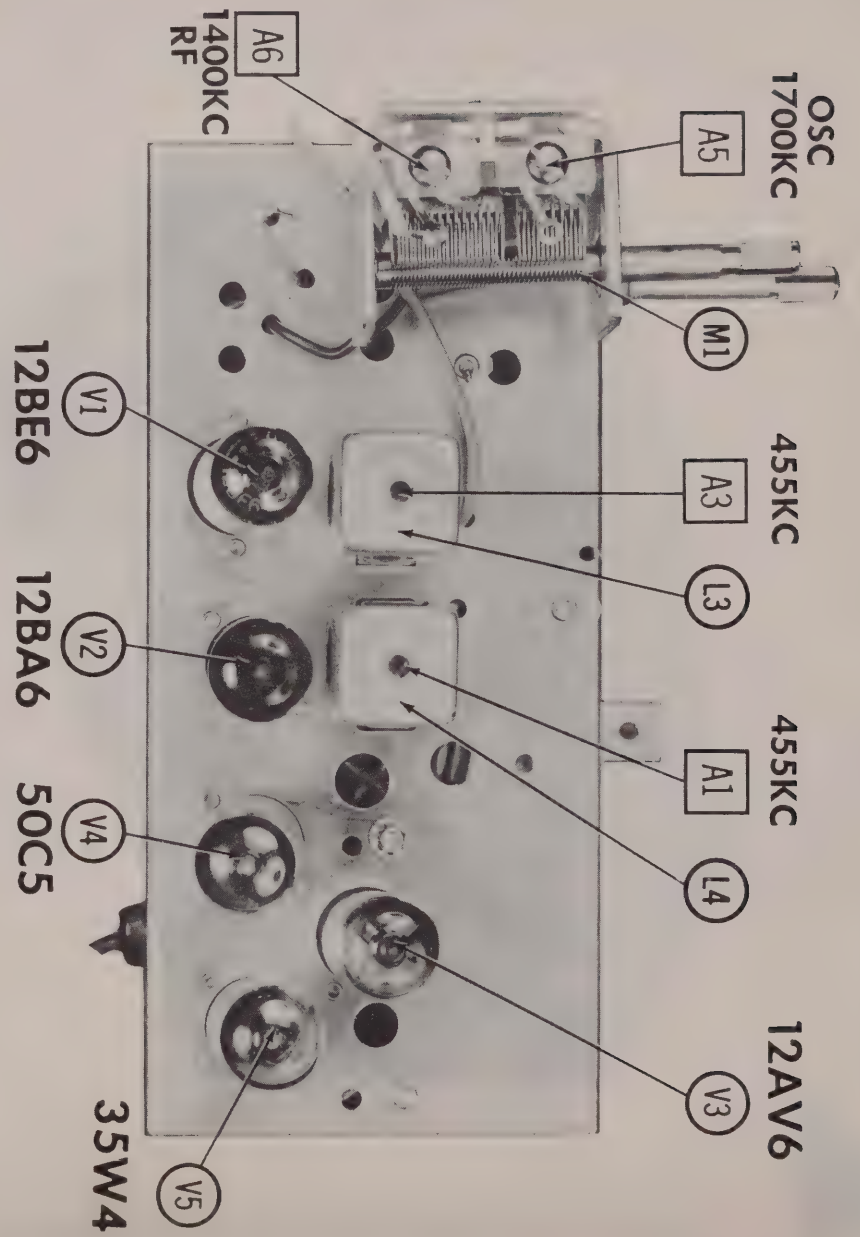
| ITEM No. | RATING | REMARKS |
|---|---|---|
| R4 | 150Ω | |
| R5 | 1500Ω 1W | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R6 | 100Ω | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | DEWALD PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Audio Coupling | 220mmf, 250mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg | 2069-2 | Aerovox PA-512-3<br>Centralab PC-151<br>Sprague DT-5 |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | DEWALD PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | Loopstick | 1156F-7 | | | | | | |
| L2 | Osc. Coil | 1154D-6 | | | | 69 OSC.* | | |
| L3 | Input IF Trans. | 1091C-7 | 16-6758 | 16-6758 | BC-352 | 12-C1 | RF-1 | |
| L4 | Output IF Trans. | 1091C-7 | 16-6758 | 16-6758 | BC-353 | 12-C2 | RF-2 | |

* Drill new mounting hole.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | DEWALD PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 3150Ω | 3-4Ω | | 26S58 | A-3025 | AU-605 | A-3332 | 26S58 | S-12X | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | DEWALD PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3-4Ω | 7003C-9 | 4A07 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | DEWALD PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap. | V-217-1 | 2 Gang (Ant. 27-385mmf, Osc. 13-105mmf) |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

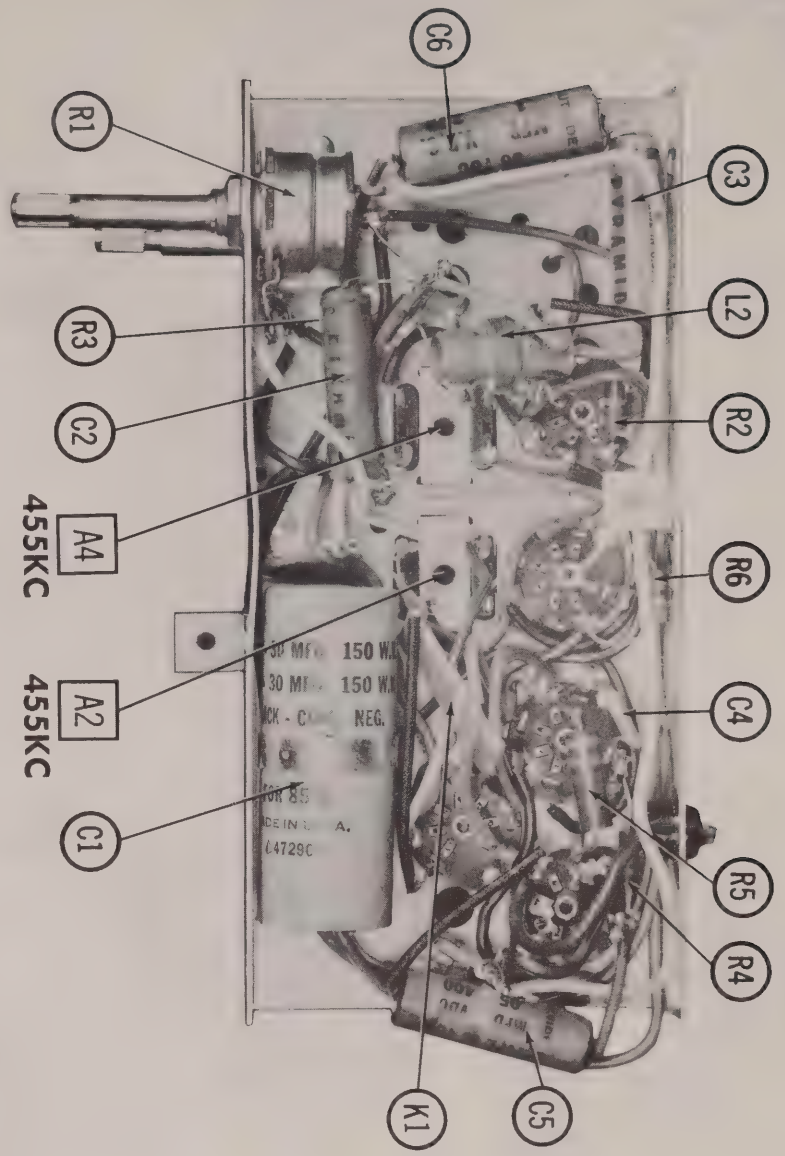
| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | K-470 | Ivory, Tuning |
| Knob | K-480 | Ivory, Volume |
| Cabinet | C-443D-2 | Ivory |
| Cabinet | C-443D-3 | Walnut |
| Cabinet Back | B-134C-5 | |

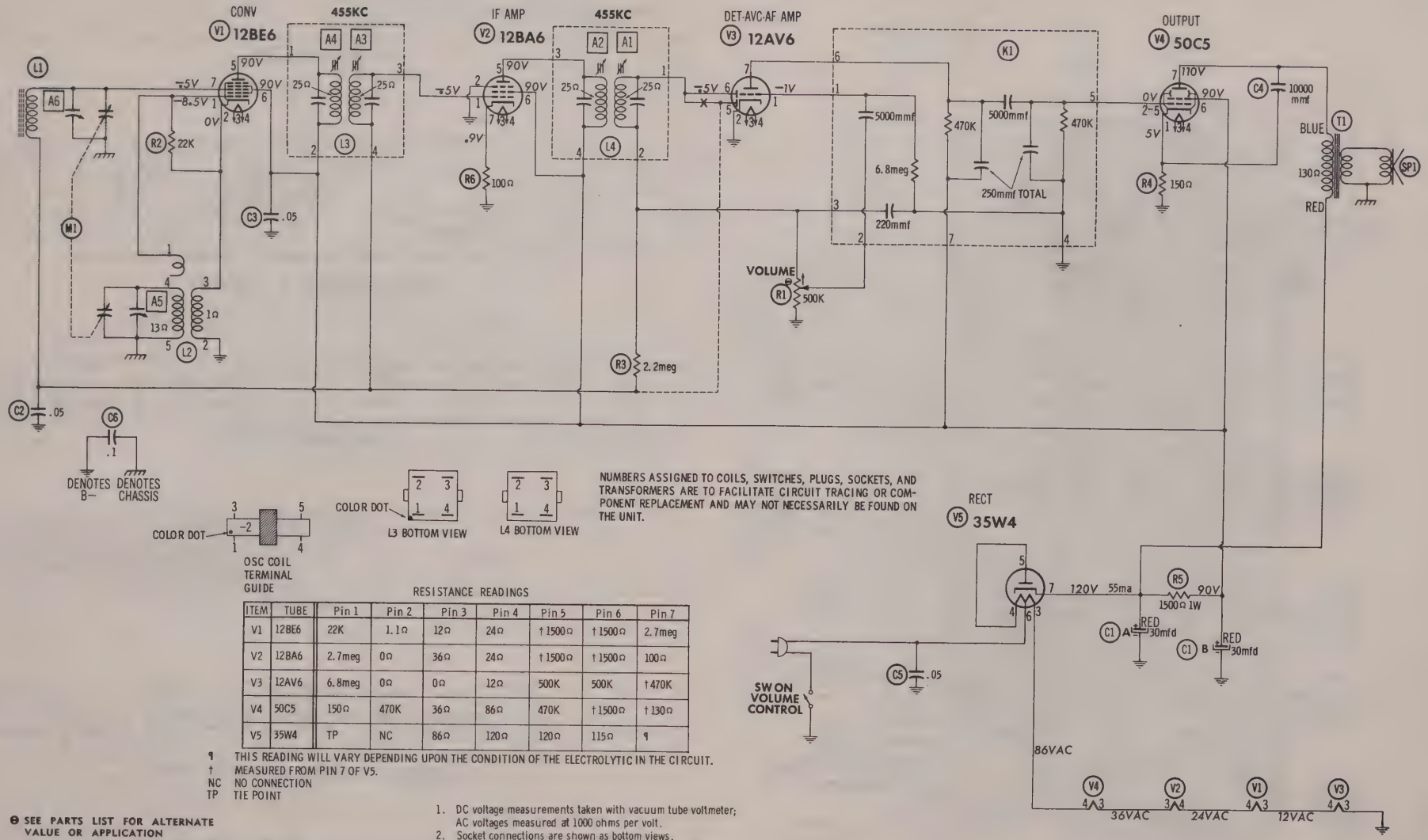
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

# CHASSIS BOTTOM VIEW






NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V1 | 12BE6 | 22K | 1.1Ω | 12Ω | 24Ω | †1500Ω | †1500Ω | 2.7meg |
| V2 | 12BA6 | 2.7meg | 0Ω | 36Ω | 24Ω | †1500Ω | †1500Ω | 100Ω |
| V3 | 12AV6 | 6.8meg | 0Ω | 0Ω | 12Ω | 500K | 500K | †470K |
| V4 | 50C5 | 150Ω | 470K | 36Ω | 86Ω | 470K | †1500Ω | †130Ω |
| V5 | 35W4 | TP | NC | 86Ω | 120Ω | 120Ω | 115Ω | ¶ |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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**DEWALD MODEL M-550**

PHOTOFACT* Folder



FISHER MODEL
MPX-10

FISHER MODEL
MPX-10

| | |
|---|---|
| TRADE NAME | Fisher Model MPX-10 |
| MANUFACTURER | Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y. |
| TYPE SET | AC Operated 5 Tube Stereo Multiplex Adaptor |
| POWER SUPPLY | 105-125 Volts AC, 50-60 Cycles RATING 18 Watts, .2 Amp. @117 Volts AC |

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JZ327



SET 464 FOLDER 9

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆ | | | | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | Sub Carrier Cath. Follower-Sub Carrier Amp. | 7025 (ECC83/12AX7* | V4 | Matrix Amp. -Matrix Amp. | 7025(ECC83/12AX7* ) |
| V2 | Sub Carrier Amp. | 7025 (ECC83/12AX7* | V5 | Channel A Output-Channel B Output | 7025 (ECC83/12AX7*) |
| V3 | Sub Carrier Cath. Follower-Sub Carrier Amp. | ECC82/12AU7 | | | |

* Alternate

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA FISHER PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1A | ▬40 | 300 | C670-125 | | C0870 | FP327.89 | TMT-181 | TVLS-3561.4* | |
| B | ■40 | 250 | | | BR4025 | | | | |
| C | ▲40 | 250 | | | | | | | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

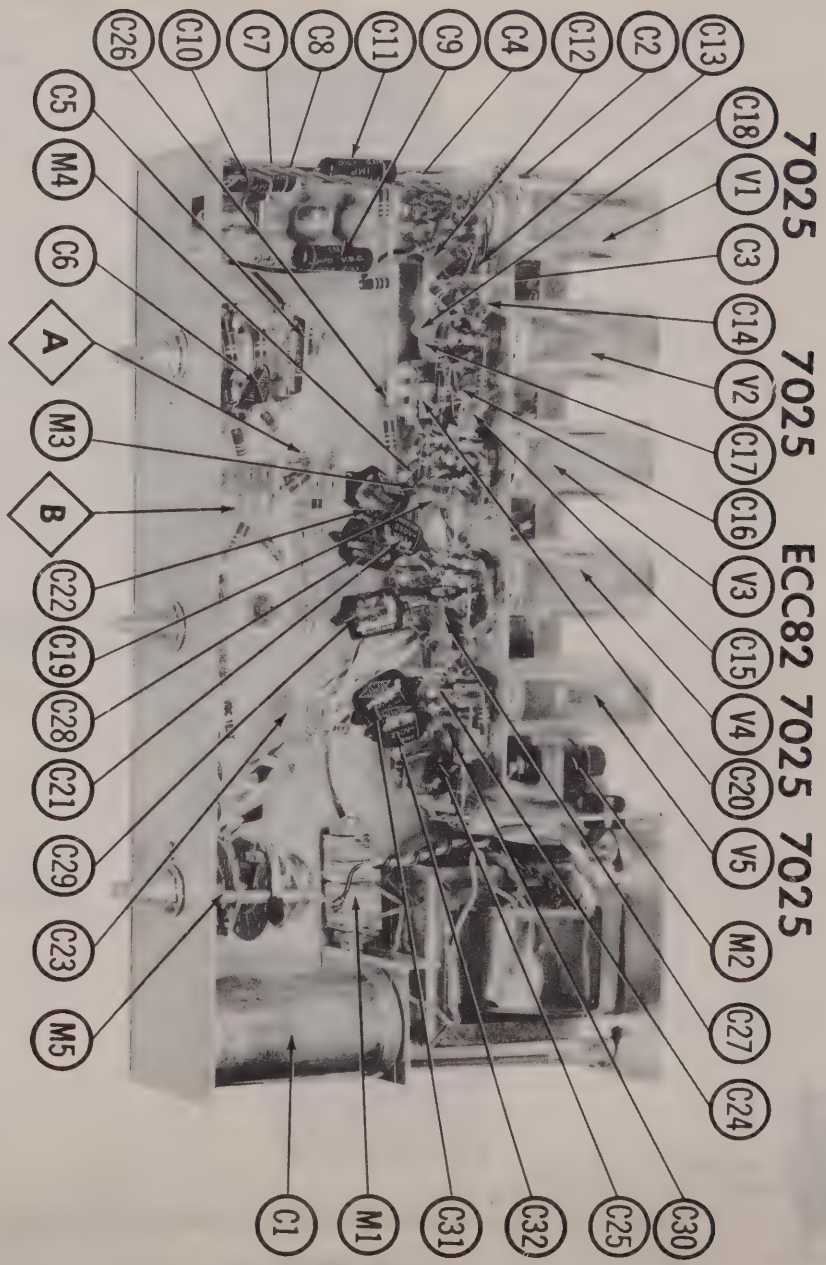
| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C2 | 8 1000V NPO 10% | | | | C10V8C | | | |
| C3 | 20000 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C4 | 12 1000V NPO 10% | | | TCZ-12 | C10Q12C | CCTO-120 | CNO-412 | MS-412 |
| C5 | .0022 200V 5% | | | | 1R5D22 | CM-20B-222J | | MS-222 |
| C6 | .047 250V 10% | | V84C4S47 | | PM4S47 | 4DP-3-473 | GTM-4147 | 4TM-S47 |
| C7 | .0082 200V 5% | | | | 1DR3D82 | 6DP-2-822 5% | | MS-282 |
| C8 | .0082 200V 5% | | | | 1DR3D82 | 6DP-2-822 5% | | MS-282 |
| C9 | .003 200V 5% | | | | 1R5D3 | 6DP-1-302 5% | | MS-23 |
| C10 | .0082 200V 5% | | | | 1DR3D82 | 6DP-2-822 5% | | MS-282 |
| C11 | .0082 200V 5% | | | | 1DR3D82 | 6DP-2-822 5% | | MS-282 |
| C12 | 50000 | | BPD-05 | DF-503 | CUB2S5 | 6DP-3-503 | TA-150 | 5HK-S50 |
| C13 | 47 1000V N750 10% | | | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C14 | 47 1000V N750 10% | | | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C15 | 50000 | | BPD-05 | DF-503 | CUB2S5 | 6DP-3-503 | TA-150 | 5HK-S50 |
| C16 | 1000 | | BPD-001 | DD-102 | BYA10D1M | CCD-102 | B-210 | 5HK-D10 |
| C17 | 50000 | | BPD-05 | DF-503 | CUB2S5 | 6DP-3-503 | TA-150 | 5HK-S50 |
| C18 | 1000 | | BPD-001 | DD-102 | BYA10D1M | CCD-102 | B-210 | 5HK-D10 |
| C19 | 33 1000V N750 10% | | | DTN-33 | C10Q33U | CCTN-330 | CN7-433 | 10TCU-Q33 |
| C20 | 820 5% | | | | 1R5T82 | CM-20B-821J | MCB451 | MS-382 |
| C21 | .022 250V 10% | | V84C4S22 | | PM4S22 | 4DP-2-223 | GTM-4122 | 4TM-S22 |
| C22 | .1 250V 10% | | V84C4P1 | | PM4P1 | 4DP-3-104 | GTM-401 | 4TM-P1 |
| C23 | 47 1000V N750 10% | | | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C24 | 20000 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C25 | .1 250V 10% | | V84C4P1 | | PM4P1 | 4DP-3-104 | GTM-401 | 4TM-P1 |
| C26 | 20000 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C27 | 20000 | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C28 | .1 250V 10% | | V84C4P1 | | PM4P1 | 4DP-3-104 | GTM-401 | 4TM-P1 |
| C29 | .1 250V 10% | | V84C4P1 | | PM4P1 | 4DP-3-104 | GTM-401 | 4TM-P1 |
| C30 | 47 1000V N750 10% | | | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 10TCU-Q47 |
| C31 | .022 250V 10% | | V84C4S22 | | PM4S22 | 4DP-2-223 | GTM-4122 | 4TM-S22 |
| C32 | .1 250V 10% | | V84C4P1 | | PM4P1 | 4DP-3-104 | GTM-401 | 4TM-P1 |

## CONTROLS

| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA FISHER PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 500K * | ½ | R734-118 | | | | ■ UE3955 | Output Level, Channel A |
| B | 500K* | ½ | | | | | | Output Level, Channel B |
| R2A | 500K | ½ | R734-119 | B-59 | A47-500K-S | Q11-133 | U50 | Channel Separation |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R3 | 50K | ½ | R50150-1 | | | | | Matrix Control |

■ "STA-LOC" equivalent: FA55DT334, RU55DT334, CS3500.
* Taps @ 200K & 330K.

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | ITEM No. | RATING |
|---|---|---|---|
| R4 | 10meg | R14 | 220K |
| R5 | 4.7meg | R15 | 1500Ω |
| R6 | 33K | R16 | 150K |
| R7 | 22meg | R17 | 100K |
| R8 | 39K 5% | R18 | 220K |
| R9 | 150K | R19 | 470K |
| R10 | 3900Ω | R20 | 1500Ω |
| R11 | 470Ω | R21 | 470K |
| R12 | 680Ω | R22 | 100K |
| R13 | 2200Ω | R23 | 1000Ω |

| ITEM No. | RATING | ITEM No. | RATING |
|---|---|---|---|
| R24 | 470K | R34 | 82K |
| R25 | 10K | R35 | 47K |
| R26 | 1800Ω | R36 | 100K |
| R27 | 33K | R37 | 47K |
| R28 | 68K 5% | R38 | 3.3meg |
| R29 | 330K | R39 | 330K |
| R30 | 1meg | R40 | 22meg |
| R31 | 22meg | R41 | 100K |
| R32 | 100K | R42 | 470K |
| R33 | 100K 5% | R43 | 22meg |

| ITEM No. | RATING | ITEM No. | RATING |
|---|---|---|---|
| R44 | 4700Ω | R54 | 100K |
| R45 | 4700Ω | R55 | 1500Ω |
| R46 | 100K 5% | R56 | 1500Ω |
| R47 | 100K 5% | R57 | 220Ω |
| R48 | 47K | R58 | 220Ω |
| R49 | 100K | | |
| R50 | 47K | | |
| R51 | 3.3meg | | |
| R52 | 330K | | |
| R53 | 22meg | | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | FISHER PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | RF Choke | L734-137 | | | | | | 4MH |
| L2 | RF Choke | L734-136 | | | | | | 1.6MH |
| L3 | RF Choke | L734-136 | | | | | | 1.6MH |
| L4 | RF Choke | L734-137 | | | | | | 4MH |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | FISHER PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V ⓐ .2A | 360 VCT ⓐ .013A | 6.3V ⓐ 1.6A | T734-115 | | | | | | |

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | FISHER PART No. | FEDERAL PART No. | INTERNATIONAL PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .013A | SR50113 ① | | | 026-14C1-Q | | ① Selenium Type |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | FISHER PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | 3AG | ½A 250V | F3297 | | 312.500 (3AG ½A 250V) | 342001 | AGC ½ | HKP |

## CRYSTAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|
| | | FISHER PART No. | CBS PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| M3 | | V-RL232① | 1N636 | 1N295 | 1N295 | Counter Det. (Pigtail) |
| M4 | | V-RL232① | 1N636 | 1N295 | 1N295 | Counter Det. (Pigtail) |

① Alternate Part #V-1N541, V-1N295

## MISCELLANEOUS

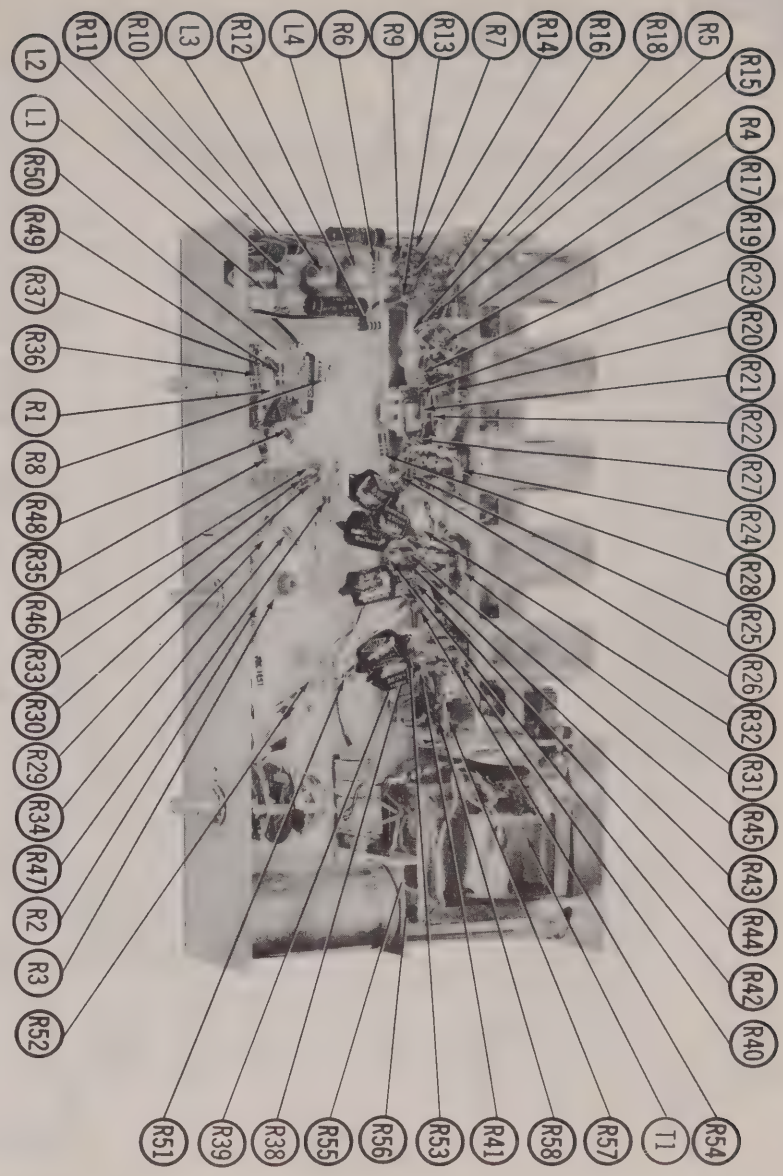
| ITEM No. | PART NAME | FISHER PART No. | NOTES |
|---|---|---|---|
| M5 | Switch | S734-124 | Selector |

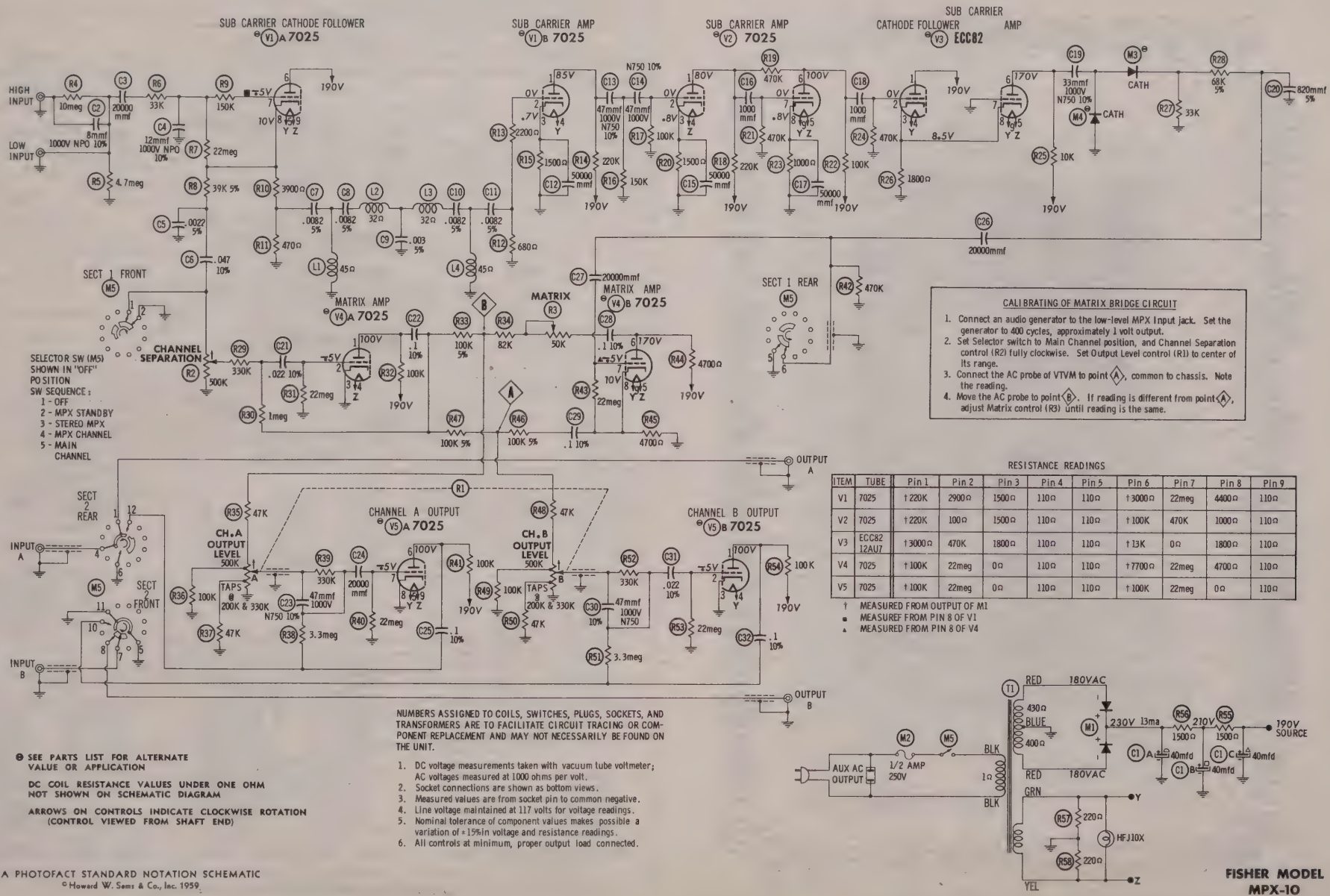
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

# CHASSIS—TOP VIEW




SUB CARRIER CATHODE FOLLOWER
V1A 7025
SUB CARRIER AMP
V1B 7025
SUB CARRIER AMP
V2 7025
SUB CARRIER CATHODE FOLLOWER AMP
V3 ECC82
HIGH INPUT
LOW INPUT
MATRIX AMP
V4A 7025
MATRIX AMP
V4B 7025
MATRIX
SECT 1 FRONT
SECT 1 REAR
CHANNEL SEPARATION
SELECTOR SW (M5) SHOWN IN "OFF" POSITION
SW SEQUENCE :
1 - OFF
2 - MPX STANDBY
3 - STEREO MPX
4 - MPX CHANNEL
5 - MAIN CHANNEL
CHANNEL A OUTPUT
V5A 7025
CHANNEL B OUTPUT
V5B 7025
CH.A OUTPUT LEVEL 500K
CH.B OUTPUT LEVEL 500K
TAPS @ 200K & 330K
SECT 2 REAR
SECT 2 FRONT
INPUT A
INPUT B
OUTPUT A
OUTPUT B
CALIBRATING OF MATRIX BRIDGE CIRCUIT
1. Connect an audio generator to the low-level MPX Input jack. Set the generator to 400 cycles, approximately 1 volt output.
2. Set Selector switch to Main Channel position, and Channel Separation control (R2) fully clockwise. Set Output Level control (R1) to center of its range.
3. Connect the AC probe of VTVM to point A, common to chassis. Note the reading.
4. Move the AC probe to point B. If reading is different from point A, adjust Matrix control (R3) until reading is the same.
RESISTANCE READINGS
ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9
V1 | 7025 | †220K | 2900Ω | 1500Ω | 110Ω | 110Ω | †3000Ω | 22meg | 4400Ω | 110Ω
V2 | 7025 | †220K | 100Ω | 1500Ω | 110Ω | 110Ω | †100K | 470K | 1000Ω | 110Ω
V3 | ECC82 12AU7 | †3000Ω | 470K | 1800Ω | 110Ω | 110Ω | †13K | 0Ω | 1800Ω | 110Ω
V4 | 7025 | †100K | 22meg | 0Ω | 110Ω | 110Ω | †7700Ω | 22meg | 4700Ω | 110Ω
V5 | 7025 | †100K | 22meg | 0Ω | 110Ω | 110Ω | †100K | 22meg | 0Ω | 110Ω
† MEASURED FROM OUTPUT OF M1
● MEASUREF FROM PIN 8 OF V1
▲ MEASURED FROM PIN 8 OF V4
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
AUX AC OUTPUT
1/2 AMP 250V
RED 180VAC
BLUE
BLK
GRN
YEL
230V 13ma
190V SOURCE
HFJ10X

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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**FISHER MODEL MPX-10**

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER

# GENERAL ELECTRIC MODELS P770A, P771A, P776A

GENERAL ELECTRIC MODELS
P770A, P771A, P776A

## MODEL P776A

| | |
|---|---|
| TRADE NAME | General Electric Models P770A, P771A, P776A |
| MANUFACTURER | General Electric Co., Products Service, Radio Receiver Dept., 869 Broad Street, Utica, N. Y. |
| TYPE SET | Battery Operated Portable Transistorized AM Receiver |
| POWER SUPPLY | 4.5 Volts DC |
| TUNING RANGE—BROADCAST | 535 - 1620KC |
| RATING | 23MA @ 4.5Volts DC (No Signal, Min. Volume)<br>26MA @ 4.5Volts DC (Signal, Normal Volume) |

GENERAL ELECTRIC MODELS
P770A, P771A, P776A

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3 .....GENERAL CEMENT #9440
A4, A5 .....GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | | Loop | 455KC (400~ Mod.) | Tuning gang fully open | Across voice coil | A1, A2, A3 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 2. | | " | 1620KC | " | " | A4 | " |
| 3. | | " | 1400KC | Tune to 1400KC signal | " | A5 | Adjust for maximum output while rocking tuning gang. |

DISASSEMBLY

1. Remove knobs.
2. Remove batteries.
3. Remove screw from center of battery compartment.
4. Separate cabinet.
5. Unsolder speaker leads.
6. Remove hex-head screws holding printed board and control bracket to cabinet.
7. Lift printed board slightly and unsolder dial light lead.
8. Remove printed board.

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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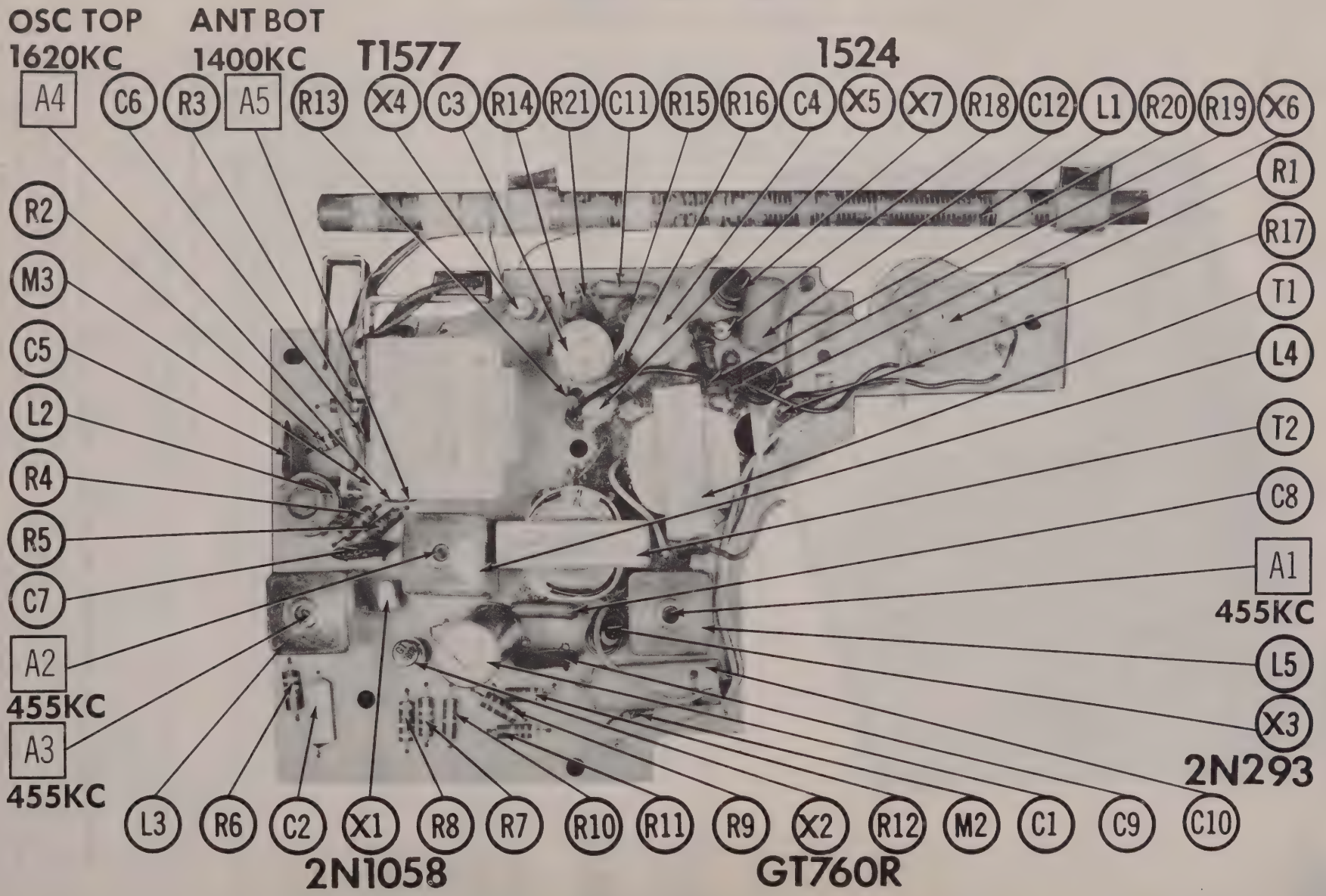
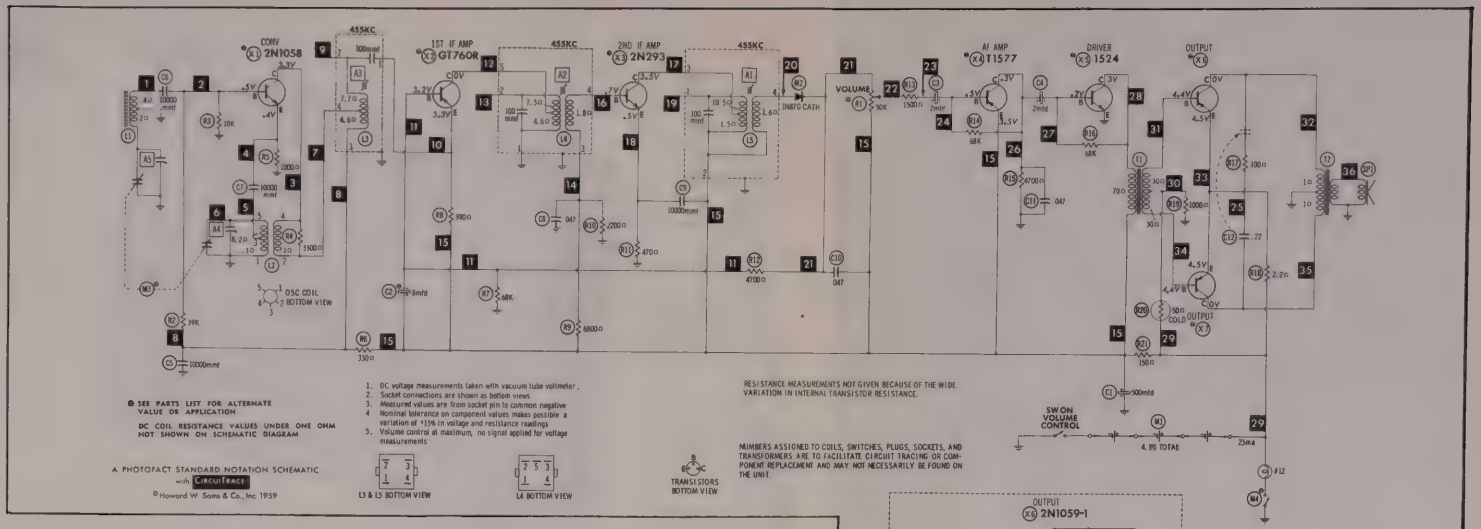
JF375



SET 464 FOLDER 10




CHASSIS TOP VIEW




● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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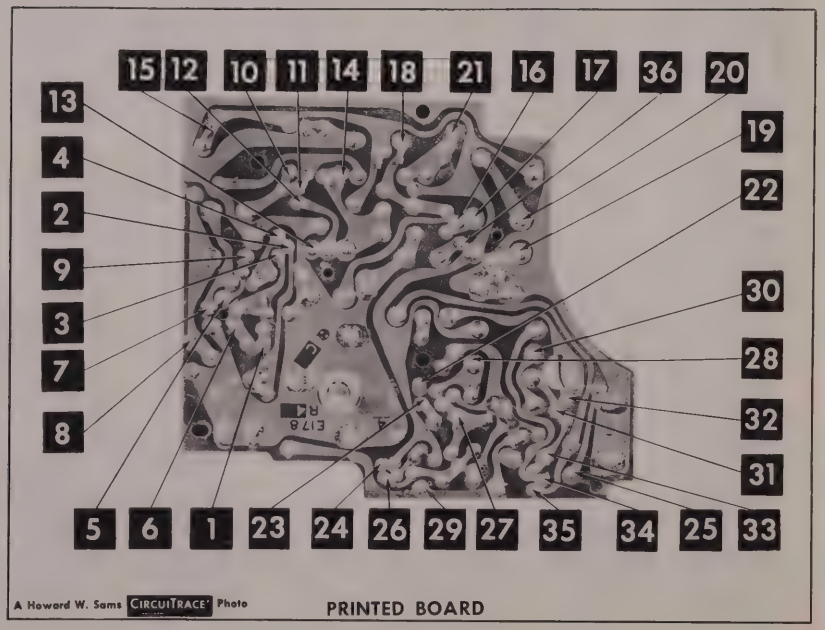



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

**GENERAL ELECTRIC MODELS P770A, P771A, P776A**

# PARTS LIST AND DESCRIPTIONS

## TRANSISTORS

| ITEM No. | ORIG. TYPE | USE | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | | CBS PART No. | RCA PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| X1 | 2N1058 ① | Converter | | | | 2N1058 | NPN |
| X2 | GT760R② | 1st IF Amplifier | | 2N410 | 2N483 | 2N410 | PNP |
| X3 | 2N293 ③ | 2nd IF Amplifier | | | | | NPN |
| X4 | T1577 ④ | AF Amplifier | | | 2N362 | | PNP |
| X5 | 1524 ⑤ | Driver | | | | 2N1059-1 | NPN |
| X6 | 4JX1E850⑥ | Output | | | | | PNP |
| X7 | 4JX1E850⑥ | Output | | | | | PNP |

① Alternate Type Sylvania 1297.
② Alternate Type 2N410 or 4JX1A813.
③ Alternate Type 2N314.
④ Alternate Type 2N191 or 4JX1E821. Note difference in basing.
⑤ Alternate Type 2N1059-1, 4JX2A816 or 4JX1E825.
⑥ Alternate PNP Type 4JX1E850A. NPN Type 2N1059-1 may be used. Check schematic for alternate wiring.

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | G. E. PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | |
| C1 | 500 | 6 | RS-1960 | PRS1120 | BR500-6 | TC605 | TD-500-6 | TVA-1103 | |
| C2 | 8 | 10 | | PWE10008 | NLW8-12 | TT25X8 | ML8-15 | TE-1127.3 | Note 1 |
| C3 | 2 | 10 | RS-1959 | XPP-10002 | BBR2-50 | TT12X2 | ML2-15 | TE-1121 | |
| C4 | 2 | 10 | RS-1959 | XPP-10002 | BBR2-50 | TT12X2 | ML2-15 | TE-1121 | |

Note 1. Some versions may use 8mfd ② 15V in this application (Part #RS-1592).

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C5 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C6 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C7 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C8 | .047 50V | | P288N-047 | DF-503 | CUB2S47 | 1DP-2-473 | GEM-4147 | 2TM-S47 |
| C9 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C10 | .047 200V | | P288N-047 | DF-503 | CUB2S47 | 4DP-3-473 | GEM-4147 | 2TM-S47 |
| C11 | .047 50V | | P288N-047 | DF-503 | CUB2S47 | 1DP-2-473 | GEM-4147 | 2TM-S47 |
| C12 | .22 50V | | P288N-22 | | CUB2P22 | 1DP-3-224 | GEM-2022 | 2TM-P22 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | G. E. PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1A | 50K | ½ | RS-1957 | B-32 | A47-50K-Z | Q13-123 | U33 | Volume Note 1 |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| C | Switch | | | KR-1 | SWE-12 | 76-1 | US-26 | Off-On |

Note 1. Model P-770A & 771A use 10K volume with switch Part #RS-2028.

## RESISTORS

**All wattages 1/2 watt, or less, unless otherwise listed.**

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R2 | 39K | |
| R3 | 10K | |
| R4 | 3300Ω | |
| R5 | 1000Ω | |
| R6 | 330Ω | |
| R7 | 68K | |
| R8 | 390Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R9 | 6800Ω | |
| R10 | 2200Ω | |
| R11 | 470Ω | |
| R12 | 4700Ω | |
| R13 | 1500Ω | |
| R14 | 68K | |
| R15 | 4700Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R16 | 68K | |
| R17 | 100Ω | |
| R18 | 2.2Ω | |
| R19 | 1000Ω | |
| R20 | 50Ω Cold | #RS-1355 |
| R21 | 150Ω | |

# G. E. Part Number.

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | G. E. PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | Loopstick | RS-1963 | | | | | | |
| L2 | Osc. Coil | RS-1964 | | | | | | |
| L3 | 1st IF Trans. | RS-1424 | | | | | | |
| L4 | 2nd IF Trans. | RS-1965 | | | | | | |
| L5 | 3rd IF Trans. | RS-1966 | | | | | | |

## TRANSFORMER (DRIVER)

| ITEM No. | TURNS RATIO | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | G. E. PART No. | Halldorson PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 1 | 1 | RS-1961 | | | | | | |

# PARTS LIST AND DESCRIPTIONS (Continued)

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | G. E. PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 80Ω CT | 3-4Ω | RS-1962 | | | | | | | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | G. E. PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3-4Ω | RB-1057 | 4A1 | |

## BATTERIES

| ITEM No. | VOLTAGE | G. E. PART No. | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | BURGESS | | EVEREADY | | MALLORY | | |
| | | | "A" | "B" | "A" | "B" | "A" | "B" | |
| M1 | 4.5V | | | 230 ① | | A100 ① | | M-13R ① | ① 3 Required. |

## CRYSTAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|
| | | G. E. PART No. | CBS PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| M2 | 1N87G | RS-1811 | 1N60 | 1N60 | 1N60 | Detector (Pigtail) |

## MISCELLANEOUS

| ITEM No. | PART NAME | G. E. PART No. | NOTES |
|---|---|---|---|
| M3 | Tuning Cap. | RS-1958 | 2 Gang, Model P776A (Ant. 26-207mmf, Osc. 21-93mmf) |
| | Tuning Cap. | RS-2029 | 2 Gang, Model P770A, P771A |
| M4 | Switch Contact | RS-1950 | Dial Lamp Power, Model P776A |
| | Switch Contact | RS-2019 | Dial Lamp Power, Models P770A, P771A |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | RS-1946 | Tuning, Model P776A |
| Knob | RS-2006 | Tuning, Model P770A, P771A |
| Knob | RS-1947 | Volume, Model P776A |
| Knob | RS-2007 | Volume, Model P770A |
| Knob | RS-2008 | Volume, Model P771A |

## CABINETS & CABINET PARTS (cont)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Cabinet | RB-1097 | Model P776A |
| Cabinet Front | RB-1102 | Model P770A (Includes Dial Window, Insert and Grille Assembly) |
| Cabinet Front | RB-1103 | Model P771A (Includes Dial Window, Insert and Grille Assembly) |
| Cabinet Back | RB-1104 | Model P770A |
| Cabinet Back | RB-1105 | Model P771A |
| Handle | RS-2003 | Model P770A |
| Handle | RS-2004 | Model P771A |

## WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT* Folder with CIRCUITRACE*

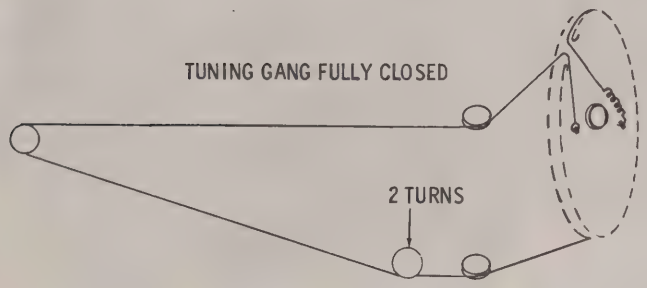


HARMAN-KARDON
MODEL TX-20

HARMAN-KARDON
MODEL TX-20

| | | | |
|---|---|---|---|
| TRADE NAME | Harman-Kardon Model TX-20 (The Serenade) | | |
| MANUFACTURER | Harman-Kardon, Inc., 520 Main Street, Westbury, L. I., N. Y. | | |
| TYPE SET | AC Operated 8 Tube FM-AM Tuner | | |
| POWER SUPPLY | 105-125 Volts AC, 60 Cycles | RATING | 32 Watts, .35 Amp. @117 Volts AC (FM) |
| TUNING RANGE—BROADCAST | 530 - 1640KC | FREQ. MOD. | 88—108MC |

## DIAL CORD STRINGING



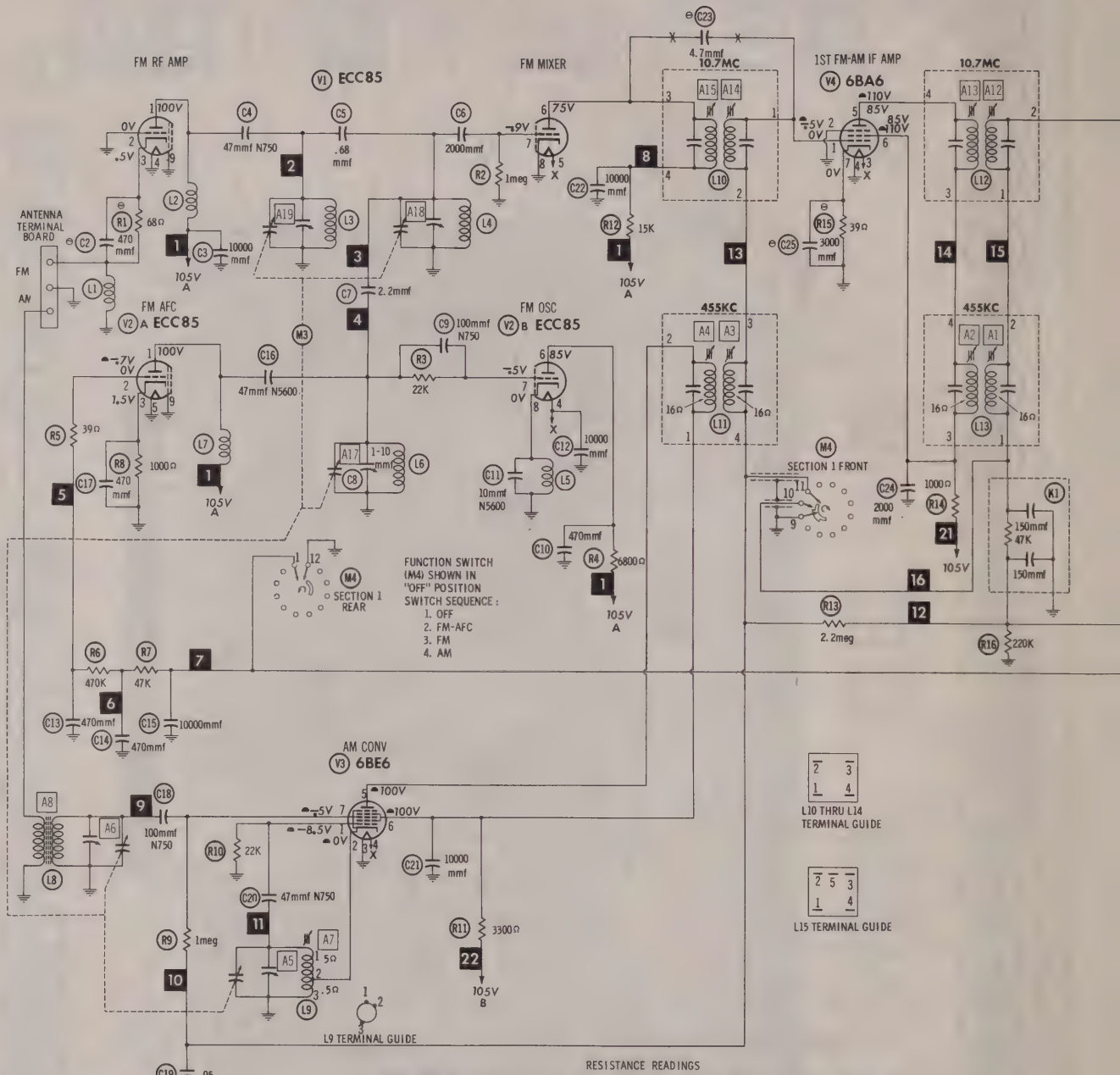

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JL333



SET 464 FOLDER 11




1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

**❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION**

**DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM**

RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | ECC85 6AQ8 | †660Ω | 0Ω | 68Ω | 0Ω | .1Ω | †15K | 1meg | 0Ω | 0Ω |
| V2 | ECC85 6AQ8 | †660Ω | 520K 2.7meg● | 1000Ω | .1Ω | 0Ω | †7400Ω | 22K | .1Ω | 0Ω |
| V3 | 6BE6 | ▲22K | ▲.5Ω | 0Ω | .1Ω | ▲†3900Ω | ▲†3900Ω | ▲3.5meg | | |
| V4 | 6BA6 | 2.4meg | 0Ω | .1Ω | 0Ω | †1600Ω | †1600Ω | 39Ω | | |
| V5 | 6AU6 | 270K | 0Ω | .1Ω | 0Ω | †2800Ω | †2800Ω | 68Ω | | |
| V6 | 6AU6 | 100K | 0Ω | .1Ω | 0Ω | †4000Ω | †4000Ω | 0Ω | | |
| V7 | 6AL5 | 0Ω | 150K | .1Ω | 0Ω | 300K | 0Ω | 150K | | |
| V8 | ECC82 12AU7 | †660Ω | 1.1meg | 100K | .1Ω | .1Ω | †660Ω | 1.1meg | 100K | 0Ω |

† MEASURED FROM OUTPUT OF M1.
▲ MEASURED IN "AM" POSITION.
■ MEASURED FROM PIN 3 OF V8.
● MEASURED IN "FM-AFC" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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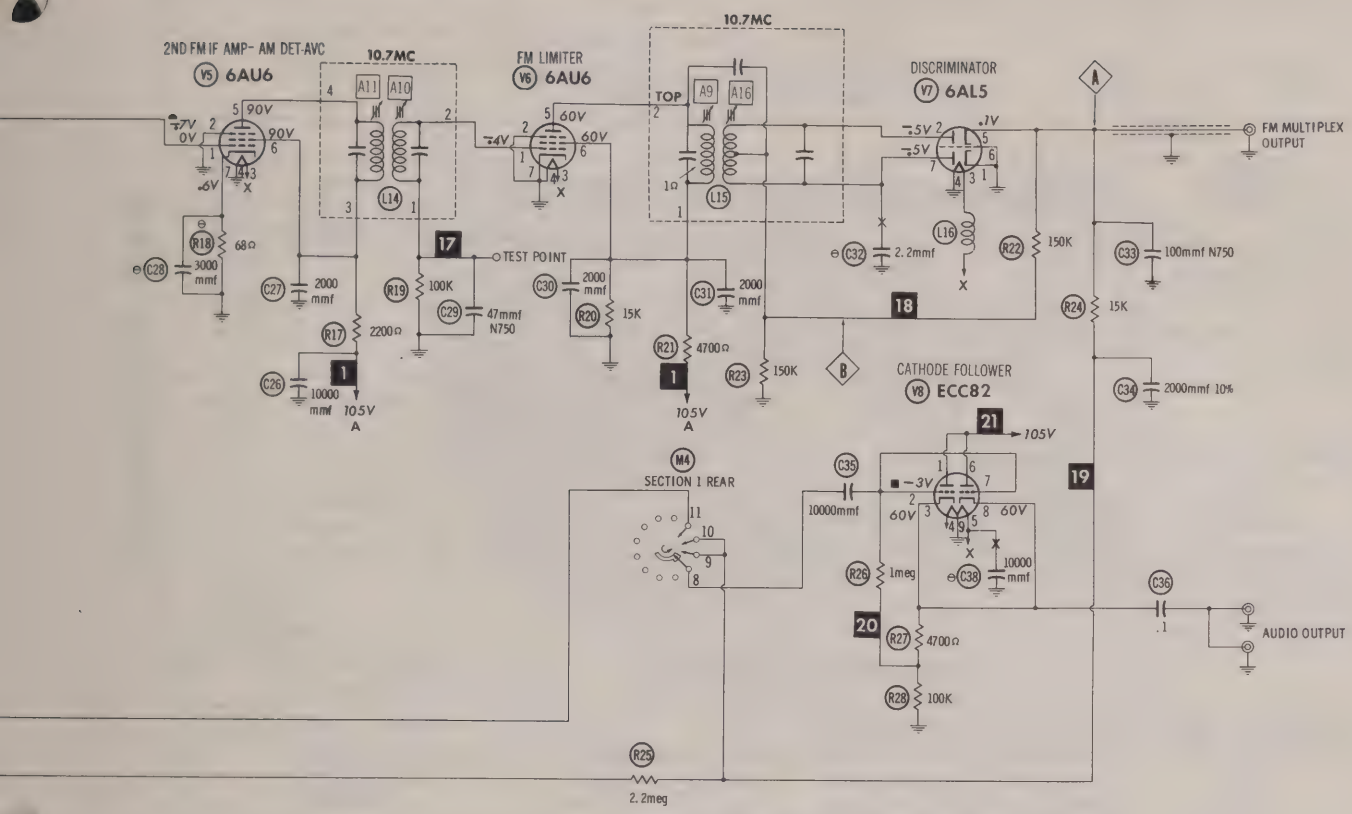
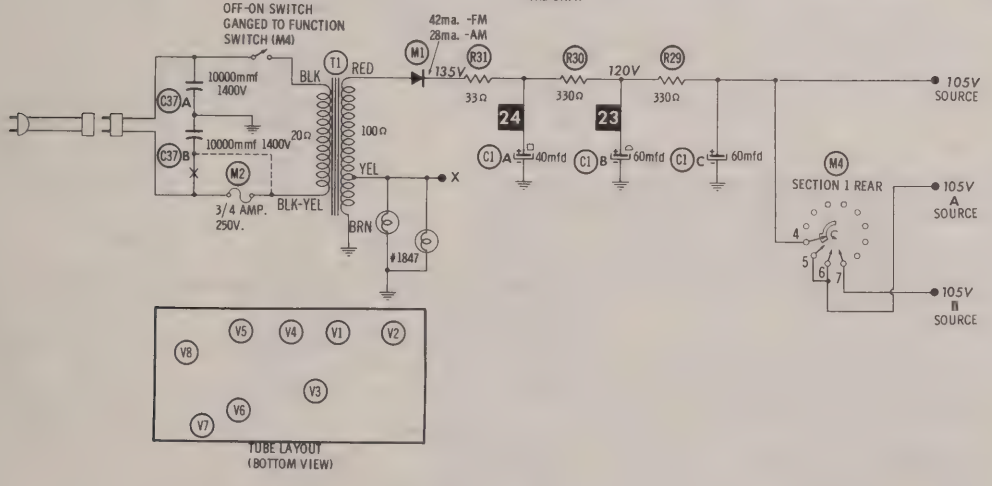



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.







TUBE LAYOUT
(BOTTOM VIEW)

HARMAN-KARDON
MODEL TX-20

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4, A9 thru A16..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A17, A18, A19..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A7..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .1mfd | High side thru .1mfd to AM RF stator lug of tuning gang. (Center section). Low side to chassis. | 455KC (400∿ Mod.) | AM | 1600KC | AC probe to tuner output. Common to chassis. | A1, A2, A3, A4 | Adjust for maximum deflection. |
| 2. | " | High side to AM antenna terminal. Low side to chassis. | 1500KC | " | 1500KC | " | A5, A6 | " |
| 3. | " | " | 600KC | " | 600KC | " | A7, A8 | Adjust for maximum deflection. Repeat Step 2. |

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 4. | .05mfd | High side to FM Mixer stator lug of tuning gang (Center section). Low side to chassis. | 10.7MC (Unmod.) | FM | Point of non-interference. | DC probe thru 100K to point (B). Common to chassis | A9, A10, A11, A12, A13, A14, A15 | Adjust for maximum deflection. |
| 5. | " | " | " | " | " | DC probe thru 100K to point (A). Common to chassis. | A16 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 4. | .05mfd | High side to FM Mixer stator lug of tuning gang (Center section). Low side to chassis. | 10.7MC (450KC Swp) | FM | Point of non-interference | Vert. amp. to point (B). Low side to chassis. | A9, A10, A11, A12, A13, A14, A15 | Adjust for maximum gain and symmetry of response similar to Fig. 1 with marker as shown. |
| 5. | " | " | " | " | " | Vert. amp. thru 27K to point (A). Low side to chassis. | A16 | Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines. |

FM RF ALIGNMENT

Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 6. | 270Ω Carbon Resistor | High side to FM antenna terminal. Low side to chassis. | 106MC (Unmod.) | FM | 106MC | DC probe thru 100K to point (B). Common to chassis. | A17, A18, A19 | Adjust for maximum deflection. |
| 7. | " | " | 90MC | " | 90MC | " | L3, L4, L6 | " |

FIG. 1

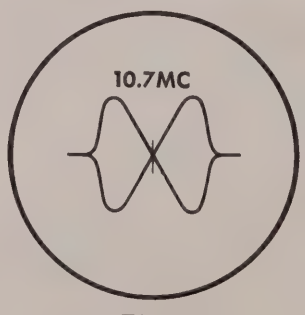



FIG. 2

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | FM RF Amp. -FM Mixer | ECC85/6AQ8 |
| V2 | FM Osc. -AFC | ECC85/6AQ8 |
| V3 | AM Converter | 6BE6 |
| V4 | 1st FM-AM IF Amp. | 6BA6 |
| V5 | 2nd FM IF Amp. -AM Det. -AVC | 6AU6 |
| V6 | FM Limiter | 6AU6 |
| V7 | Discriminator | 6AL5 |
| V8 | Cathode Follower | ECC82/12AU7 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Harman-Kardon PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1A | ■40 | 150 | JE781436 | | | PFP311.53 | | PCL-3443.5 | |
| B | ▲60 | 150 | | | | | | | |
| C | 60 | 150 | | | | | | | |

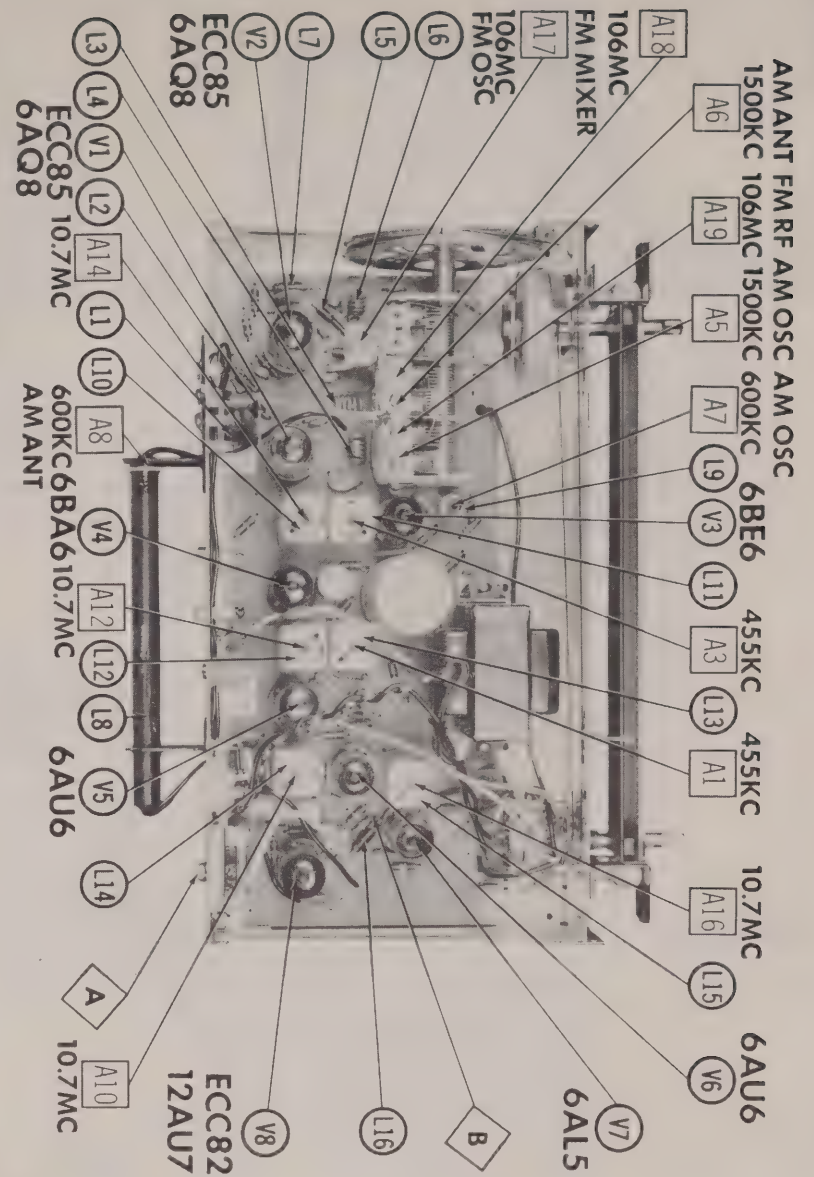
## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C2 | 470 | ① | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C3 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C4 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 5TCU-Q47 |
| C5 | .68 | | NPO-SI .68 | TCZ-R68 | | | ZT-5675 | |
| C6 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C7 | 2.2 | | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 5TCCB-V22 |
| C8 | 1-10 | #JV20688 | | 829-10 | | | | |
| C9 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T10 |
| C10 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C11 | 10 N5600 | | | | | CCTN-100 | | |
| C12 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C13 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C14 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C15 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C16 | 47 N5600 | | | | | CCTN-470 | | |
| C17 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C18 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T1 |
| C19 | 05 200V | | P2151N-047 | DF-503 | BC2S47J | 4DP-3-503 | ACE-615 | 2SE-S47 |
| C20 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-455 | 5TCU-Q47 |
| C21 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C22 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C23 | 4.7 | ② | NPO-SI 4.7 | TCZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 5TCCB-V47 |
| C24 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C25 | 3000 | ③ | BPD-003 | DD-302 | BYA10D3 | CCD-302 | UC-523 | 5GA-D30 |
| C26 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C27 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C28 | 3000 | ③ | BPD-003 | DD-302 | BYA10D3 | CCD-302 | UC-523 | 5GA-D30 |
| C29 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CNO-447 | 5TCU-Q47 |
| C30 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C31 | 2000 | | BPD-002 | DD-202 | BYA10D2 | CCD-202 | B-220 | 5HK-D20 |
| C32 | 2.2 | ② | NPO-SI 2.2 | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 5TCCB-V22 |
| C33 | 100 N750 | | N750-DI 47 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T10 |
| C34 | 2000 10% | | DI-2000 | | PM6D2 | CCS-202 | JL-220 | 6TM-D20 |
| C35 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C36 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P1 |
| C37A | 10000 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | 2HV-110 | |
| B | 10000 1400V | | DAC-27 | DD16-103 | HVE16S1 | 16DP-3-103 | 2HV-110 | |
| C38 | 10000 | ② | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |

① Some versions may use a component combination in this application (Part #STCOM2553).
② Not used in some versions.
③ Some versions may use a component combination in this application (Part #STCOM2880).

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R1 | 68Ω | Note 1 |
| R2 | 1meg | |
| R3 | 22K | |
| R4 | 6800Ω | |
| R5 | 39Ω | |
| R6 | 470K | |
| R7 | 47K | |
| R8 | 1000Ω | |
| R9 | 1meg | |
| R10 | 22K | |
| R11 | 3300Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R12 | 15K | |
| R13 | 2.2meg | |
| R14 | 1000Ω | |
| R15 | 39Ω | Note 2 |
| R16 | 220K | |
| R17 | 2200Ω | |
| R18 | 68Ω | Note 2 |
| R19 | 100K | |
| R20 | 15K | |
| R21 | 4700Ω | |
| R22 | 150K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R23 | 150K | |
| R24 | 15K | |
| R25 | 2.2meg | |
| R26 | 1meg | |
| R27 | 4700Ω | |
| R28 | 100K | |
| R29 | 330Ω | |
| R30 | 330Ω | |
| R31 | 33Ω | |

Note 1. Some versions may use a component combination in this application (Part #STCOM2553).
Note 2. Some versions may use a component combination in this application (Part #STCOM2880).

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | Harman-Kardon PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | FM Ant. Coil | | 19-2003 | 19-2003 | | 4584 | | .24uh |
| L2 | RF Choke | | | | | | | 3.3uh |
| L3 | FM RF Coil | GL781543 | | | | | | |
| L4 | FM Mixer Coil | GL781543 | | | | | | |
| L5 | Cathode Choke | | 19-1000 | 19-1000 | BC-561 | 4602 | | luh |
| L6 | FM Osc. Coil | GL781544 | | | | | | |
| L7 | RF Choke | | | | | | | 3.3uh |
| L8 | Loopstick | GL781479 | | | | | | |
| L9 | AM Osc. Coil | GL1121988 | | | | | | |
| L10 | 1st FM IF Trans. | GLCOM2827 | 16-3490 | 16-3490 | | 1463-PC | | |
| L11 | 1st AM IF Trans. | GT782122 | 16-6780 | 16-6780 | BC-356 | 13-PC1 | RF-4 | |
| L12 | 2nd FM IF Trans. | GLCOM2828 | 16-3490 | 16-3490 | | 1463-PC | | |
| L13 | 2nd AM IF Trans. | GT782123 | 16-6780 | 16-6780 | BC-357 | 13-PC2 | RF-4 | |
| L14 | 3rd FM IF Trans. | GLCOM2829 | 16-3490 | 16-3490 | | 1463-PC | | |
| L15 | Discriminator | GLCOM2830 | | | | | | |
| L16 | Fil. Choke | | | | | | | 3.3uh |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | Harman-Kardon PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V ⓐ .35A | 120V ⓐ .042A Tap ⓐ 6.3V ⓐ 2.5A | FT781419 | | | | | | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | Harman-Kardon PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | AM Det. RF Filter | 150mmf, 150mmf, 47K | PC781599 | Centralab PC-51<br>Sprague D-2 |

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | Harman-Kardon PART No. | FEDERAL PART No. | INTERNATIONAL PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .042A | Z1362133 ① | 1234AH ① | RS065 ① | 65A ① | | ① Silicon Type |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Harman-Kardon PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M2 | 3AG | 3/4A 250V | | | 312.750 (3AG 3/4A) 250V | 357001 | AGC 3/4 | 4405 |

## MISCELLANEOUS

| ITEM No. | PART NAME | Harman-Kardon PART No. | NOTES |
|---|---|---|---|
| M3 | Tuning Cap | JV2343004 | 6 Gang |
| M4 | Switch | ER2342799 | Function |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | PCOM2840 | |
| Dial Glass | P2342808 | |
| Escutcheon | P2342802 | |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

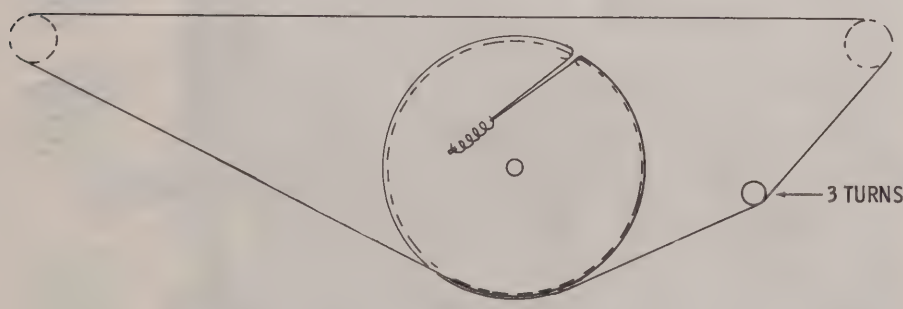
# LAFAYETTE MODEL LT-75

LAFAYETTE MODEL LT-75

LAFAYETTE MODEL LT-75

| | | |
|---|---|---|
| TRADE NAME | Lafayette Model LT-75 | |
| SUPPLIER | Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, New York | |
| TYPE SET | AC Operated 7 Tube FM Tuner | |
| POWER SUPPLY | 105-125 Volts AC, 60 Cycles | |
| TUNING RANGE | FREQ. Mod. FM 88-108MC | RATING 26 Watts, .28 Amp. @ 117 Volts AC |

## DIAL CORD STRINGING




TUNING GANG FULLY CLOSED

FRONT VIEW

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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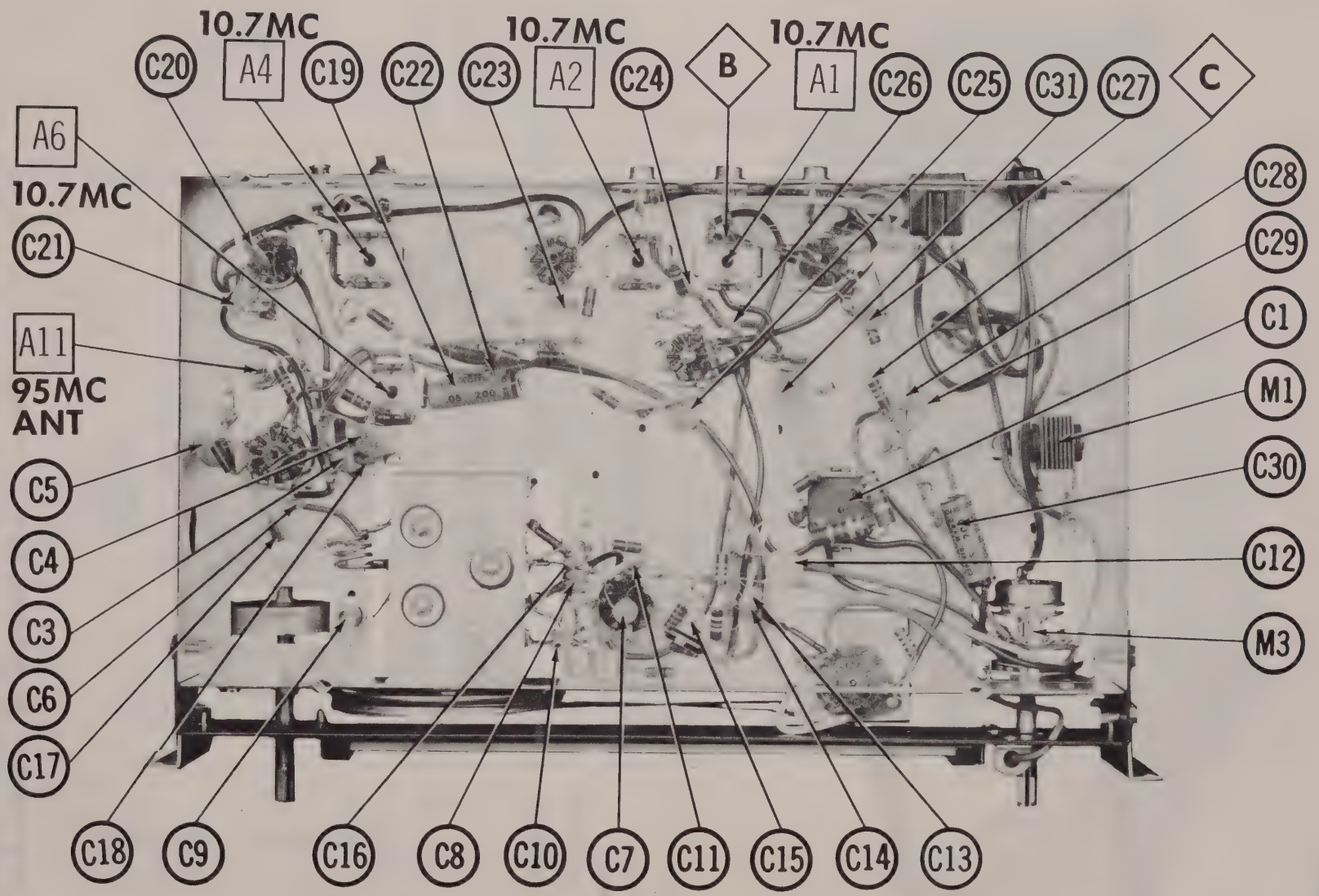
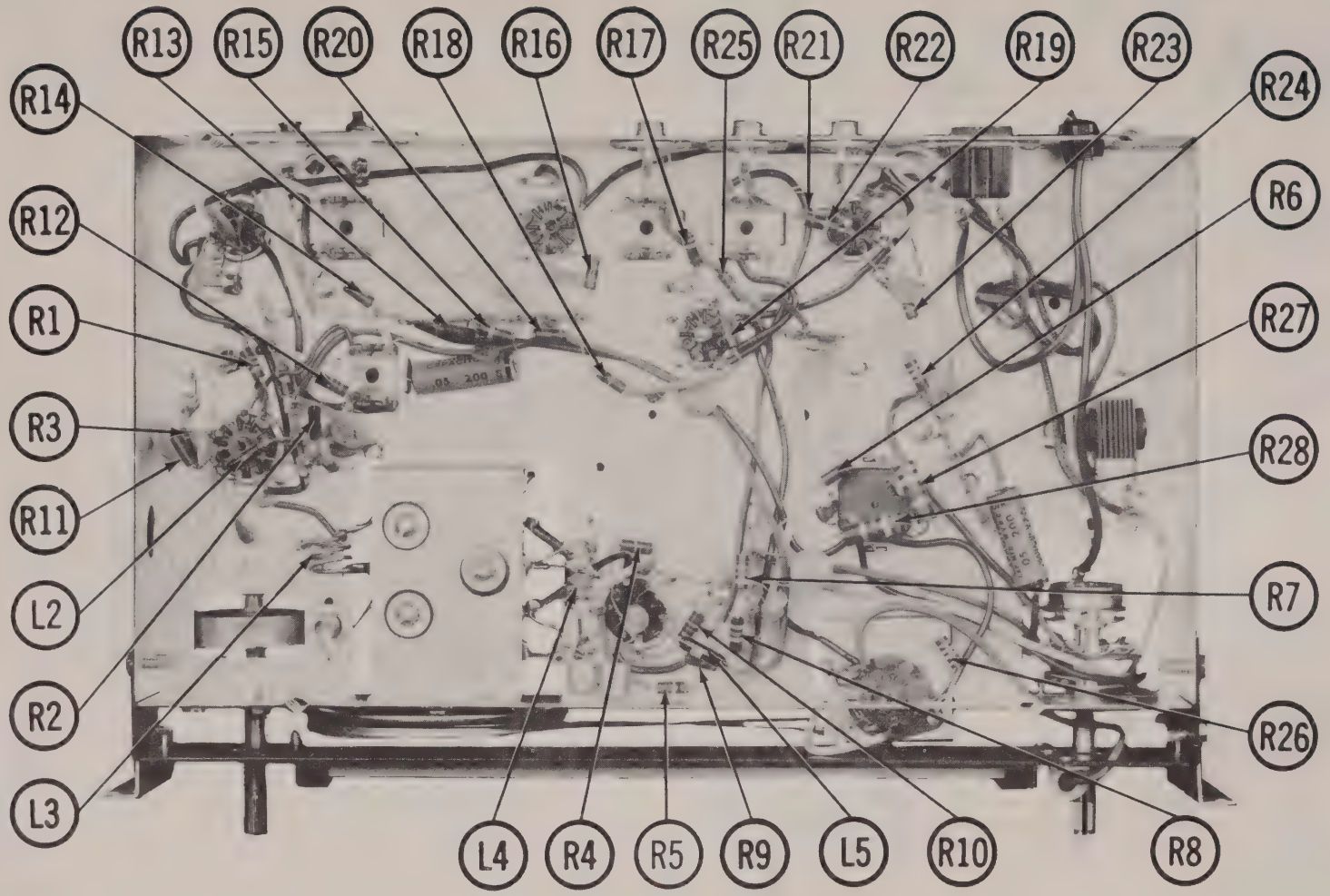
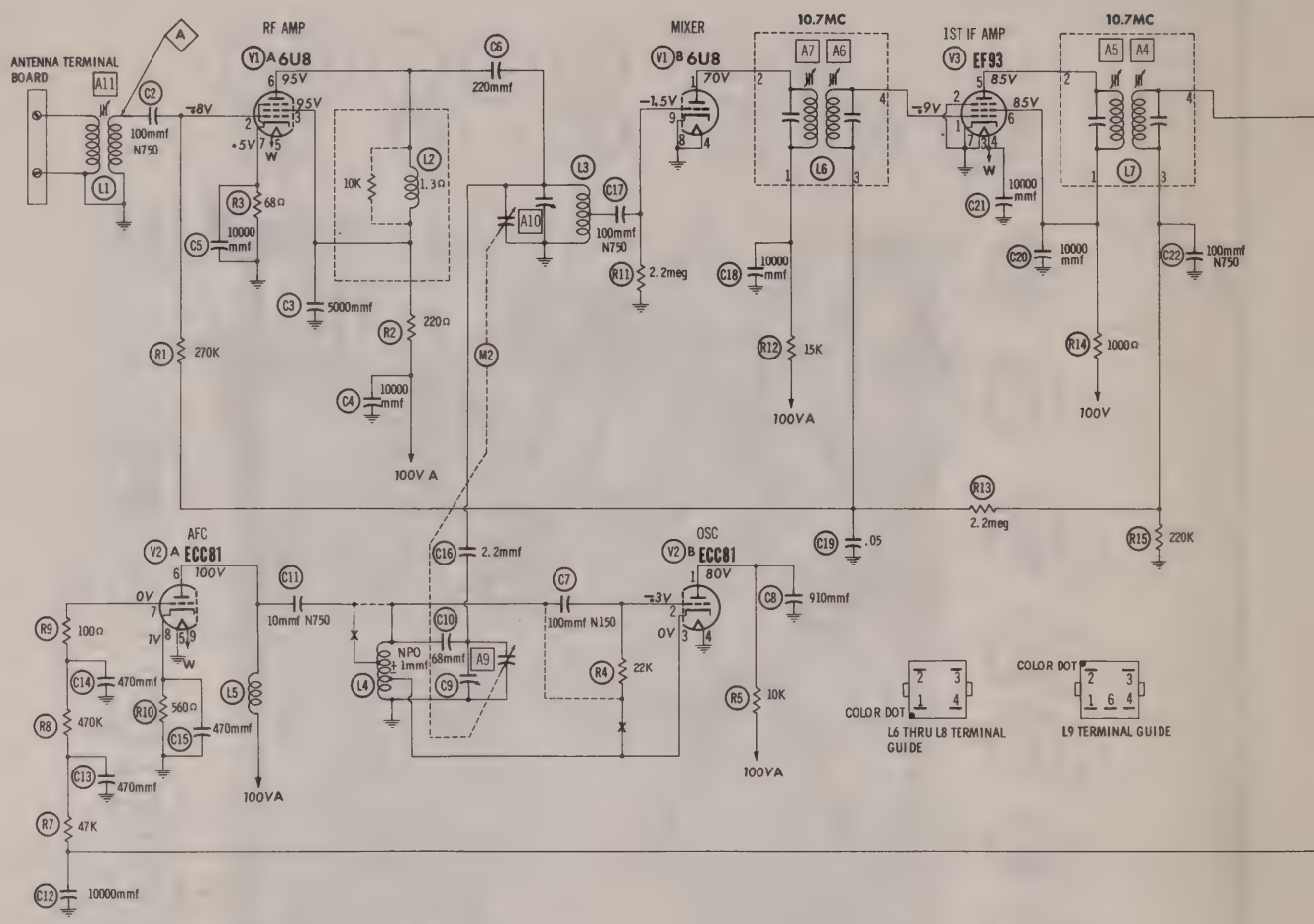



CHASSIS BOTTOM VIEW - ALIGNMENT, CAPACITOR & MISC. IDENT.




CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 6U8 | †15K | 2.7meg | †1000Ω | 0Ω | .1Ω | †1000Ω | 68Ω | 0Ω | 2.2meg |
| V2 | ECC81 12AT7 | †10K | 22K | 0Ω | 0Ω | 0Ω | †800Ω | ▲1.7meg 520K | 560Ω | .1Ω |
| V3 | EF93 6BA6 | 2.4meg | 0Ω | 0Ω | .1Ω | †1800Ω | †1800Ω | 0Ω | | |
| V4 | EF94 6AU6 | 220K | 0Ω | 0Ω | .1Ω | †2800Ω | †2800Ω | 0Ω | | |
| V5 | EF94 6AU6 | 100K | 0Ω | 0Ω | .1Ω | †11K | †11K | 0Ω | | |
| V6 | EB91 6AL5 | 0Ω | 100K | .1Ω | 0Ω | 200K | 0Ω | 100K | | |
| V7 | EM80 6BR5 | 2.3meg | 0Ω | NC | 0Ω | .1Ω | NC | †390K | †800Ω | †800Ω |

† MEASURED FROM OUTPUT OF M1.
▲ MEASURED IN "FM-AFC" POSITION.
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. No signal applied for voltage measurements.

**Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION**

**DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM**

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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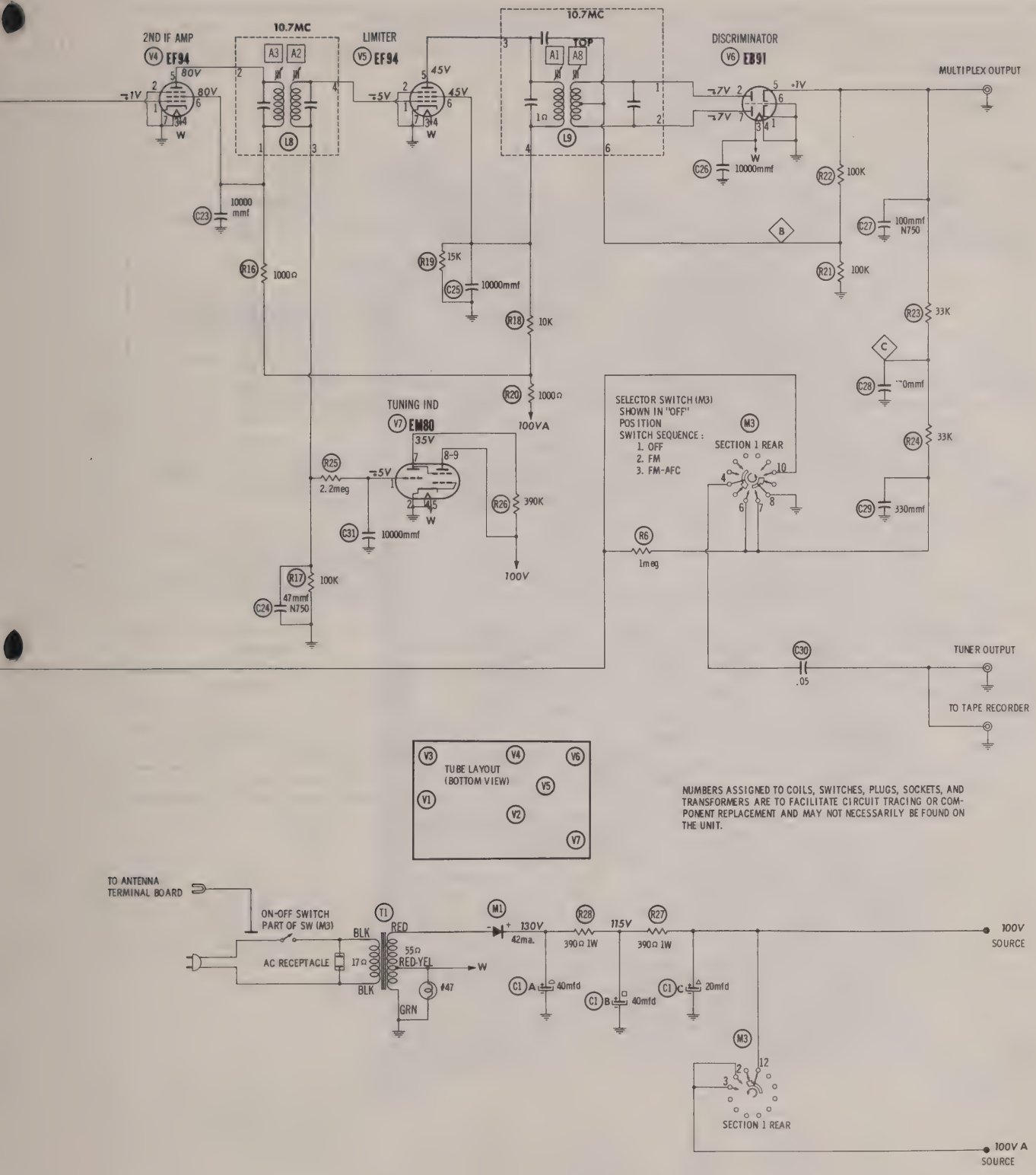



**LAFAYETTE MODEL LT-75**

# ALIGNMENT INSTRUCTIONS

**ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT**

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A1 thru A8 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A9, All ..... GENERAL CEMENT #8721, 8722
WALSCO #2519
A10 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

IF ALIGNMENT USING SIGNAL GENERATOR AND VTVM

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | Direct | High side to point (A). Low side to chassis. | 10.7MC (Unmod.) | FM (No AFC) | Point of non-interference | DC probe thru 1meg to point (B). Common to chassis. | A1, A2, A3, A4, A5, A6, A7 | Adjust for maximum deflection. |
| 2. | " | " | " | " | " | DC probe thru 1meg to point (C). Common to chassis. | A8 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | Direct | High side to point (A). Low side to chassis. | 10.7MC (Unmod.) | FM (No AFC) | Point of non-interference. | Vert. Amp. thru 1meg to point (B). Low side to chassis. | A1, A2, A3, A4, A5, A6, A7 | Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. |
| 2. | " | " | " | " | " | Vert. Amp. thru 1meg to point (C). Low side to chassis. | A8 | Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A1 for maximum amplitude and straightness of crossover lines. |

RF ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 3. | 270Ω Carbon Resistor | Across antenna terminals with 270Ω in high side. | 108MC (Unmod.) | FM (No AFC) | 108MC | DC probe to point (B). Common to chassis. | A9 | Adjust for maximum deflection. |
| 4. | " | " | 106MC | " | 106MC | " | A10 | Adjust for maximum deflection while rocking tuning gang. |
| 5. | " | " | 95MC | " | 95MC | " | A11 | Adjust for maximum delfection. |

FIG. 1

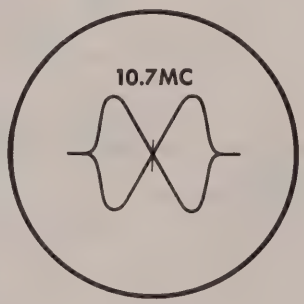
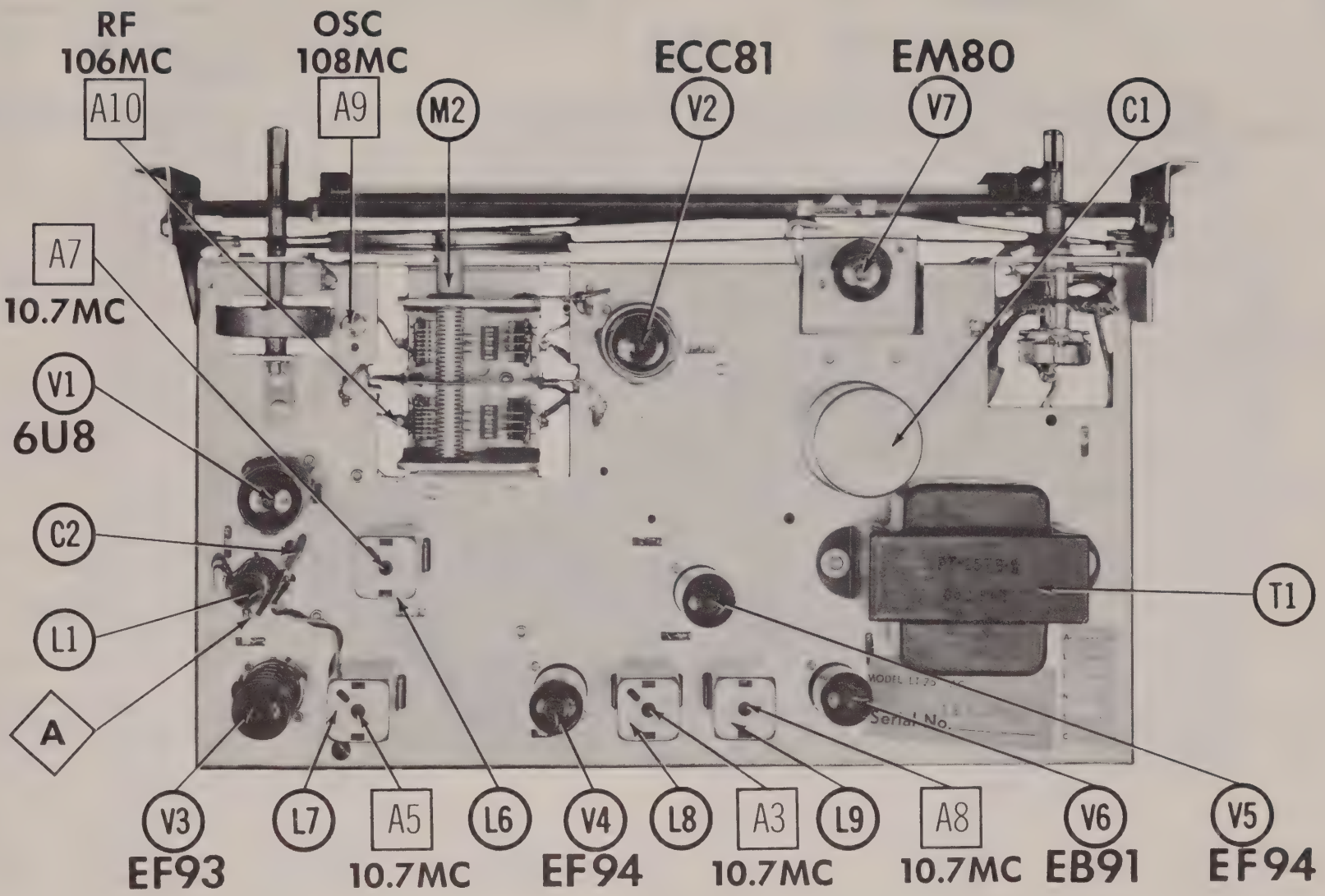


FIG. 2




CHASSIS TOP VIEW
MODEL LT-75
LAFAYETTE

# PARTS LIST AND DESCRIPTIONS

## TUBES

| • CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA • | | | | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | RF Amp. - Mixer | 6U8 | V5 | Limiter | EF94/6AU6 |
| V2 | AFC - Oscillator | ECC81/12AT7 | V6 | Discriminator | EB91/6AL5 |
| V3 | 1st IF Amplifier | EF93/6BA6 | V7 | Tuning Indicator | EM80/6BR5 |
| V4 | 2nd IF Amplifier | EF94/6AU6 | | | |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | LAFAYETTE PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1A | ▲40 | 200 | E-212-4 | AFH4-02 | D0020 | FP318.74 | TMT-181 | TVL-3577 | |
| B | ■40 | 200 | | | | | | | |
| C | ▲20 | 200 | | | | | | | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C2 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T10 |
| C3 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 5HK-D50 |
| C4 | 10000 | | 5HK-S1 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C5 | 10000 | | 5HK-S1 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C6 | 220 | | BPD-00022 | DD-221 | L10T22 | CCD-221 | B-322 | 5GA-T22 |
| C7 | 100 N150 | | | | | * | | 10TCP-T10 |
| C8 | 910 | | | DD-911 | L10T91 | CCD-102 | | |
| C9 | | #TC-223-1 | | | | | | |
| C10 | 68 NPO ±1mmf | | | | | CCTO-680 | | |
| C11 | 10 N750 | | N750-DI 10 | DTN-10 | C10Q1U | CCTN-100 | CN7-410 | 5TCU-Q10 |
| C12 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C13 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C14 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C15 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C16 | 2.2 | | | TCZ-2R2 | C10V22C | CCTO-2R2 | CNO-522 | 5TCCB-V22 |
| C17 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T10 |
| C18 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C19 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GTM-215 | 2TM-S5 |
| C20 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C21 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C22 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T10 |
| C23 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C24 | 47 N750 | | N750-DI 47 | DTN-47 | C10Q47U | CCTN-470 | CN7-447 | 5TCU-Q47 |
| C25 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C26 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C27 | 100 N750 | | N750-DI 100 | DTN-100 | C10T1U | CCTN-101 | CN7-310 | 5TCU-T10 |
| C28 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C29 | 330 | | BPD-00033 | DD-331 | L10T33 | CCD-331 | B-333 | 5GA-T33 |
| C30 | .05 200V | | P288N-05 | DD-503 | CUB2S5 | 4DP-3-503 | GTM-215 | 2TM-S5 |
| C31 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
\# Lafayette Part Number.

## RESISTORS

**All wattages 1/2 watt, or less, unless otherwise listed.**

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R1 | 270K | |
| R2 | 220Ω | |
| R3 | 68Ω | |
| R4 | 22K | |
| R5 | 10K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R6 | 1meg | |
| R7 | 47K | |
| R8 | 470K | |
| R9 | 100Ω | |
| R10 | 560Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R11 | 2.2meg | |
| R12 | 15K | |
| R13 | 2.2meg | |
| R14 | 1000Ω | |
| R15 | 220K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R16 | 1000Ω | |
| R17 | 100K | |
| R18 | 10K | |
| R19 | 15K | |
| R20 | 1000Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R21 | 100K | |
| R22 | 100K | |
| R23 | 33K | |
| R24 | 33K | |
| R25 | 2.2meg | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R26 | 390K | |
| R27 | 390Ω 1W | |
| R28 | 390Ω 1W | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | LAFAYETTE PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | Antenna Coil | 1102B-4 | | | | | | |
| L2 | RF Choke | 1104-4 | | | SW-631 | | | 4.7uh |
| L3 | RF Coil | 1100-3 * | | | | | | |
| L4 | Osc. Coil | O-156-5 | | | | | | |
| L5 | RF Choke | 1104-3 | 19-1002 | 19-1002 | SW-630 | 4606 | | 2.7uh |
| L6 | 1st IF Trans. | 1038B-5 | 16-3487 | 16-3487 | FM-254 | 1463 | | |
| L7 | 2nd IF Trans. | 1038B-5 | 16-3487 | 16-3487 | FM-254 | 1463 | | |
| L8 | 3rd IF Trans. | 1038B-5 | 16-3487 | 16-3487 | FM-254 | 1463 | | |
| L9 | Discriminator | 1038B-2 | 17-3494 | 17-3494 | FM-253 | 1464 | | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | LAFAYETTE PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V ② .28A | 120V ② .042A Tap ② 6.3V ② 2.3A | PT-157-B | 26R38 | P-3045 | | PA8421 | 26R38 | R-30X |

## RECTIFIERS

| ITEM No. | RATING | REPLACEMENT DATA | | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | LAFAYETTE PART No. | FEDERAL PART No. | INTERNATIONAL PART No. | SARKES TARZIAN PART No. | SYLVANIA PART No. | |
| M1 | .042A | R-837-1 ① | 1235AH ① | T100 ① | 65A ① | SR200 ② | ① Selenium Type<br>② Silicon Type |

## MISCELLANEOUS

| ITEM No. | PART NAME | LAFAYETTE PART No. | NOTES |
|---|---|---|---|
| M2 | Tuning Cap. | V222B-3 | 2 Gang |
| M3 | Switch | 8089-6 | Selector Off-FM-FM AFC |

## CABINETS & CABINET PARTS

**(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)**

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | K-483-2 | Tuning |
| Knob | K-483-1 | Selector |
| Dial Scale | DG-607 | |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

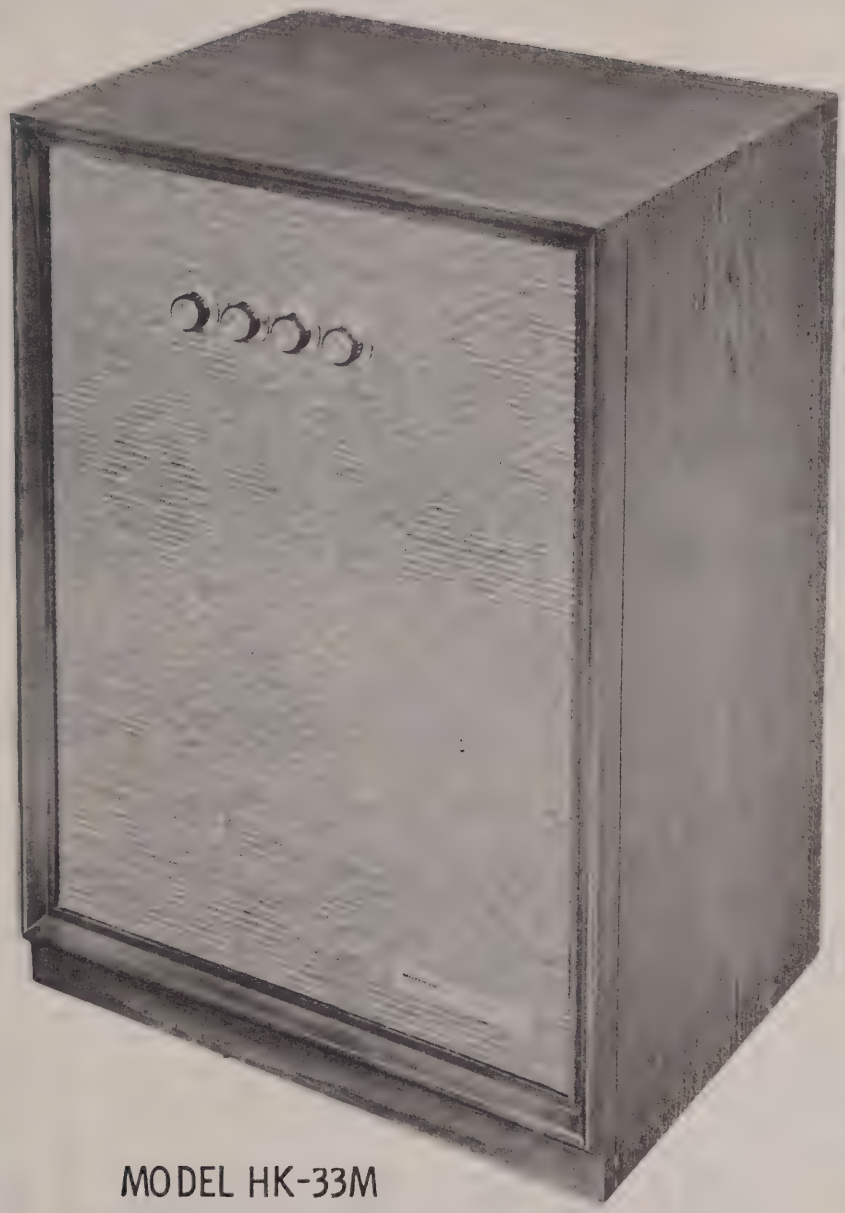
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

# MOTOROLA MODELS HK-33B, CW, M, MC, W (Ch. HS-701)

MOTOROLA MODELS HK-33B, CW, M, MC, W (Ch. HS-701)



MODEL HK-33M

MOTOROLA MODELS HK-33B, CW, M, MC, W (Ch. HS-701)

| | |
|---|---|
| TRADE NAME | Motorola Models HK-33B, HK-33CW, HK-33M, HK-33MC, HK-33W (Ch. HS-701) |
| MANUFACTURER | Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois |
| TYPE SET | AC Operated 5 Tube Audio Amplifier |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles RATING 70 Watts, .67 Amp. @ 117 Volts AC |

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JX268

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ◆ CBS ◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆ | | | | | |
|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | AF Amplifier | 12AX7 | V4 | Output | EL84/6BQ5 |
| V2 | AF Amp. -Phase Inv. | 12AX7 | V5 | Rectifier | 5Y3GT |
| V3 | Output | EL84/6BQ5 | | | |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | MOTOROLA PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1A | ▲40 | 400 | 23B632244 | AFH4-79-10 | D0663.2 | | | TVL-4737 | |
| B | ■40 | 400 | | | | | | | |
| C | ▲20 | 400 | | | | | | | |
| D | 40 | 25 | | | | | | | |
| C2 | 10 | 400 | 23B642409 | PRS450V10 | BR1045 | TC72 | TD-10-450 | TVA-1705 | |
| C3 | 5 | 10NP | 23A632250 | NP-PRS50V4 | BBR10-25 † | TCN105 | | TVAS-1110 * | |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C4 | .01 400V | | P488N-01 | DD-103 | CUB4S1 | 4DP-1-103 | GEM-411 | 4TM-S1 |
| C5 | .02 400V | | P488N-02 | DD-203 | CUB4S2 | 4DP-2-203 | GEM-412 | 4TM-S2 |
| C6 | 470 10% | | DI-470 | D6-471 | | CCD-471 | JL-347 | 10TS-T47 |
| C7 | 100 N750 10% | | N750-DI 100 | TCN-100 | C10T1U | CCTU-101 | CN7-310 | 10TCU-T10 |
| C8 | 1000 10% | | DI-1000 | | | CCS-102 | JL-210 | 10TS-D10 |
| C9 | 2000 10% | | DI-2000 | | | CCS-202 | JL-220 | 10TS-D20 |
| C10 | .02 400V | | P488N-02 | DD-203 | CUB4S2 | 4DP-2-203 | GEM-412 | 4TM-S2 |
| C11 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C12 | .02 400V | | P488N-02 | DD-203 | CUB4S2 | 4DP-2-203 | GEM-412 | 4TM-S2 |
| C13 | .02 400V | | P488N-02 | DD-203 | CUB4S2 | 4DP-2-203 | GEM-412 | 4TM-S2 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | MOTOROLA PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1 | 1meg | ½ | 18K642165 * | C1-70 * | | Q18-137XX | UDT-289 | Loudness, Taps @ 400K & 700K |
| R2 A | 2meg | ½ | 18K642164 | B-76 | A47-2meg-Z | Q13-139 | U55 | Treble |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R3 A | 2meg | ½ | 18K642164 | B-76 | A47-2meg-Z | Q13-139 | U55 | Bass |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |

* Includes K1

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

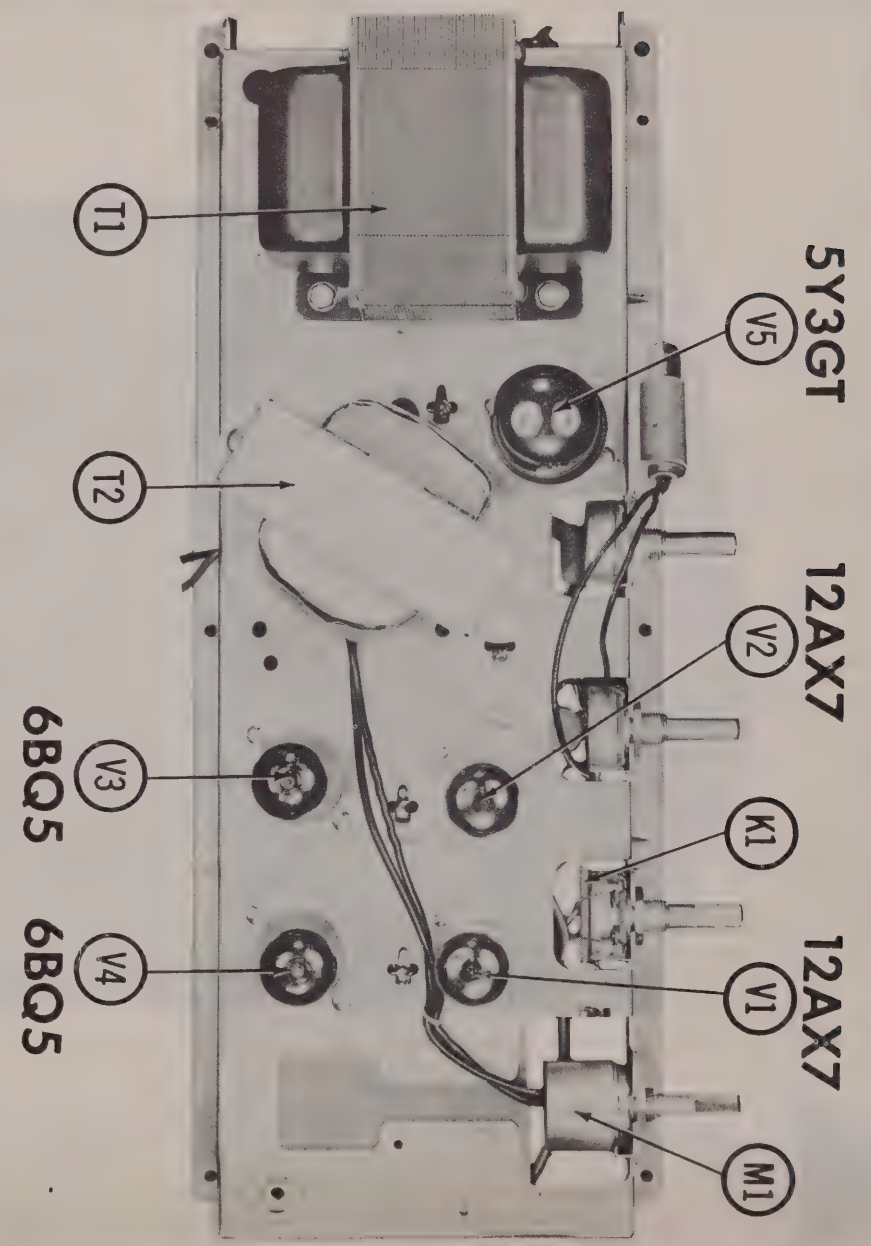
| ITEM No. | RATING | REMARKS |
|---|---|---|
| R4 | 2.2meg | |
| R5 | 18K | |
| R6 | 820Ω | |
| R7 | 180K | |
| R8 | 15K | |
| R9 | 100K | |
| R10 | 18K | |
| R11 | 1800Ω | |
| R12 | 100K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R13 | 100K | |
| R14 | 18K | |
| R15 | 1800Ω | |
| R16 | 220K | |
| R17 | 100K | |
| R18 | 1800Ω | |
| R19 | 100Ω | |
| R20 | 220K | |
| R21 | 150Ω 5W | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R22 | 100Ω | |
| R23 | 270K | |
| R24 | 6800Ω | |
| R25 | 3300Ω | |
| R26 | 330Ω 1W | |
| R27 | 220Ω 5W | |
| R28 | 47Ω | Note 1 |
| R29 | 47Ω | Note 1 |
| R30 | .47Ω | Note 2 |

Note 1. Not used in some versions.
Note 2. Value may vary, replace with .47Ω (WW).

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COMPONENT COMBINATIONS

| ITEM No. | USE | MOTOROLA DESCRIPTION | MOTOROLA PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Tone Compensation | 50mmf, 100mmf, 3000mmf, 3000mmf, 100K, 100K | (Part of R1) | Centralab PC-325<br>Sprague TC-5 |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MOTOROLA PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| | PRI. | SEC. 1 | SEC. 2 | | | | | | | |
| T1 | 117V ⓐ<br>.67A | 600 VCT<br>ⓐ .080A | 5V ⓐ<br>2A | 25C638551 | 22R04① | | | P-8175② | 22R04① | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3V ⓐ<br>1.9A | | | | | | | | | |

① Use Original Shields.
② Drill New Mounting Holes.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | MOTOROLA PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| | PRI. | SEC. | | | | | | | | |
| T2 | 6200Ω CT | 6-8Ω | 25C639252 | 22S74 ① | A-2905① | AU-609① | A-3880① | 22S74 ① | S-55X① | ① Drill New Mounting Hole<br>② Alternate Part Number |
| | 4300Ω CT | 3-4Ω | 25C642122 ② | 22S74 ① | A-3028① | AU-609① | A-3880① | 22S74 ① | S-57Z ① | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | | | | MOTOROLA PART No. | QUAM PART No. | |
| | SIZE | FIELD | V. C. IMP. | | | |
| SP1 | 12" | PM | 8-9Ω | 50K642736 | 12A6AZ8.5 | |
| SP2 | 5" | PM | 8-9Ω | 50C638562 | 5A15TZ8.9 | |
| SP3 | 5" | PM | 8-9Ω | 50C638562 | 5A15TZ8.9 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | MOTOROLA PART No. | NOTES |
|---|---|---|---|
| M1 | Switch | 40B642918 | Off-On |

## CABINETS & CABINET PARTS

**(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)**

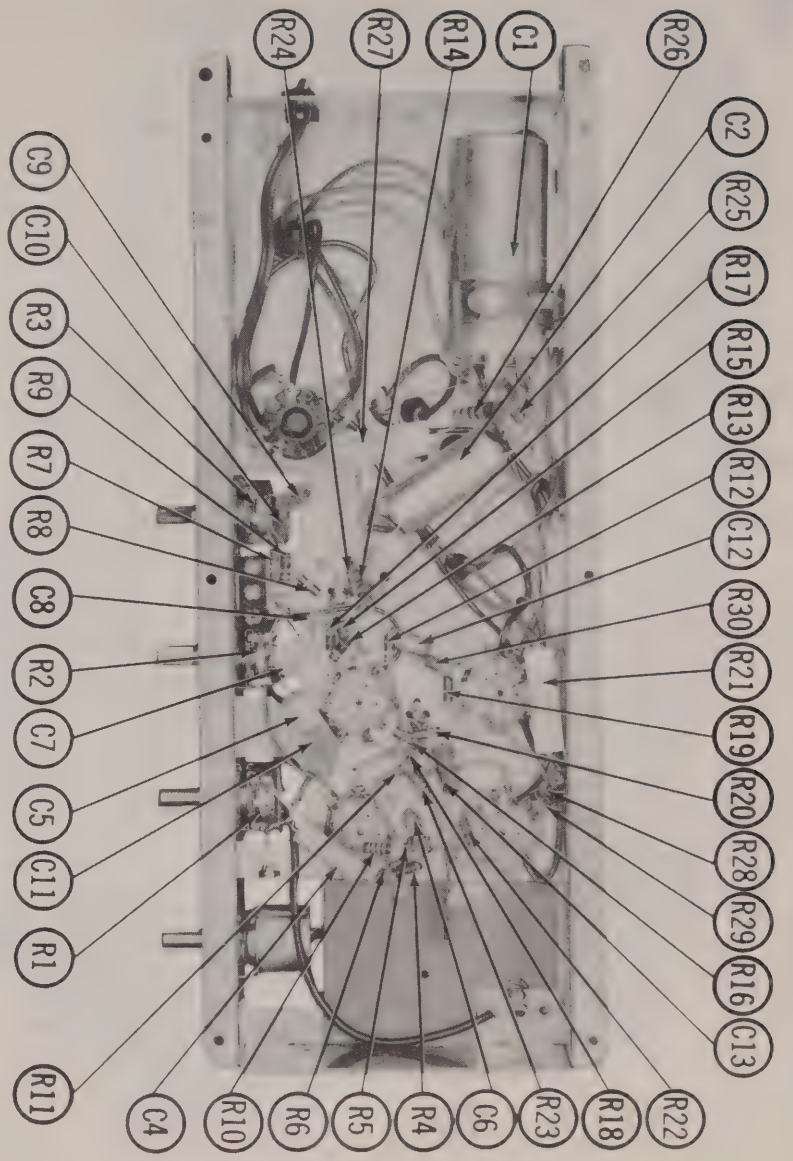
| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | 36K642749 | On-Off |
| Knob | 36K642748 | Loudness |
| Knob | 36K642751 | Treble |
| Knob | 36K642753 | Bass |
| Cabinet | 16K642761 | Blond, Model HK-33B |
| Cabinet | 16K642764 | Cherry Wood, Model HK-33CW |
| Cabinet | 16E642760 | Mahogany, Model HK-33M |
| Cabinet | 16K742763 | California Mahogany, Model HK-33MC |
| Cabinet | 16K642762 | Walnut, Model HK-33W |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

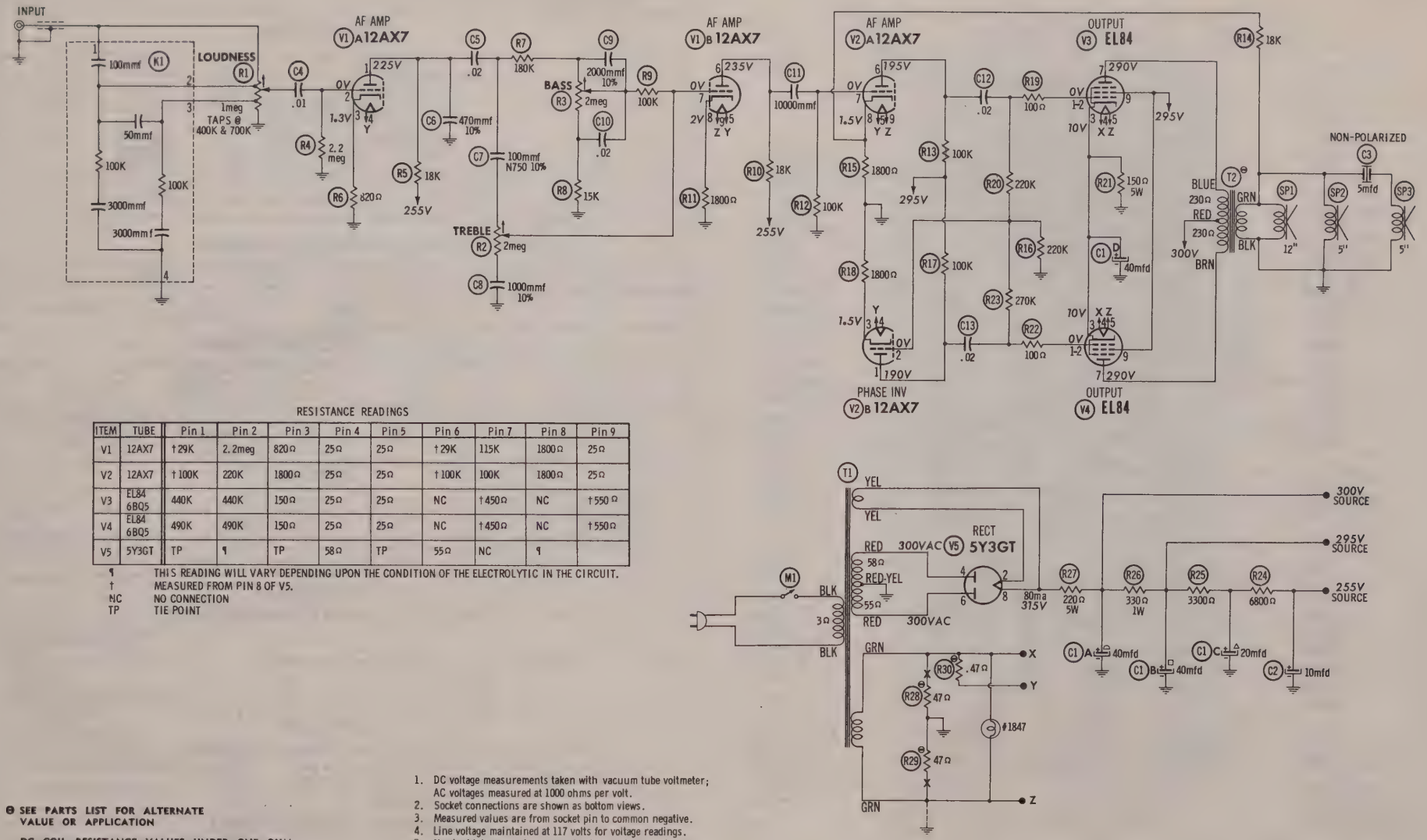
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

## CHASSIS BOTTOM VIEW




MOTOROLA MODELS HK-33B, CW, M, MC, W (Ch. HS-701)

FOLDER 13




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 12AX7 | †29K | 2.2meg | 820Ω | 25Ω | 25Ω | †29K | 115K | 1800Ω | 25Ω |
| V2 | 12AX7 | †100K | 220K | 1800Ω | 25Ω | 25Ω | †100K | 100K | 1800Ω | 25Ω |
| V3 | EL84 6BQ5 | 440K | 440K | 150Ω | 25Ω | 25Ω | NC | †450Ω | NC | †550Ω |
| V4 | EL84 6BQ5 | 490K | 490K | 150Ω | 25Ω | 25Ω | NC | †450Ω | NC | †550Ω |
| V5 | 5Y3GT | TP | ¶ | TP | 58Ω | TP | 55Ω | NC | ¶ | |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V5.
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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**MOTOROLA MODELS HK-33B, CW, M, MC, W (Ch. HS-701)**

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLYMPIC
MODEL 465

OLYMPIC
MODEL 465

| | |
|---|---|
| TRADE NAME | Olympic Model 465 |
| MANUFACTURER | Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y. |
| TYPE SET | AC Operated 4 Tube AM Receiver With Electric Clock |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles |
| RATING | 29 Watts, .31 Amp. @ 117 Volts AC |
| TUNING RANGE—BROADCAST | 535 - 1650KC |

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A3, A4 ..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1mfd | High side to stator lug of antenna section of tuning gang. Low side to B- | 455KC (400~ Mod.) | Tuning gang fully open | Across voice coil | A1, A2 | Adjust for maximum output. |
| 2. | " | " | 1650KC | " | " | A3 | " |
| 3. | | Loop | 1500KC | 1500KC signal | " | A4 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3. |

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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JG308



SET 464 FOLDER 14

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA) |
|---|---|---|
| V1 | Converter | 12AU6 |
| V2 | Det. - AF Amplifier | 12AV6 |
| V3 | Output | 50C5 |
| V4 | Rectifier | 35W4 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA OLYMPIC PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1A | 60 | 150 | 160-146 | PRS150V50 3010 | BBRT53215 | TCT3107 | TDLT-6 | TVA-3453 | |
| B | 30 | 150 | | | | | | | |
| C | 10 | 150 | | | | | | | |

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C2 | 47 | | SI 47 | DD-470 | L10Q47 | CCD-470 | CN0-447 | 5GA-Q47 |
| C3 | 220 | | BPD-00022 | DD-221 | L10T22 | CCD-221 | B-322 | 5GA-T22 |
| C4 | .01 600V | | P688N-01 | DD-103 | CUB6S1 | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C5 | .01 600V | | P688N-01 | DD-103 | CUB6S1 | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C6 | .05 400V | | P488N-05 | DF-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S5 |
| C7 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |

## CONTROLS

| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA OLYMPIC PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 2meg | ½ | 120-156 | B-76 | A47-2meg-Z | Q13-139 | U55 | Volume |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |

## RESISTORS

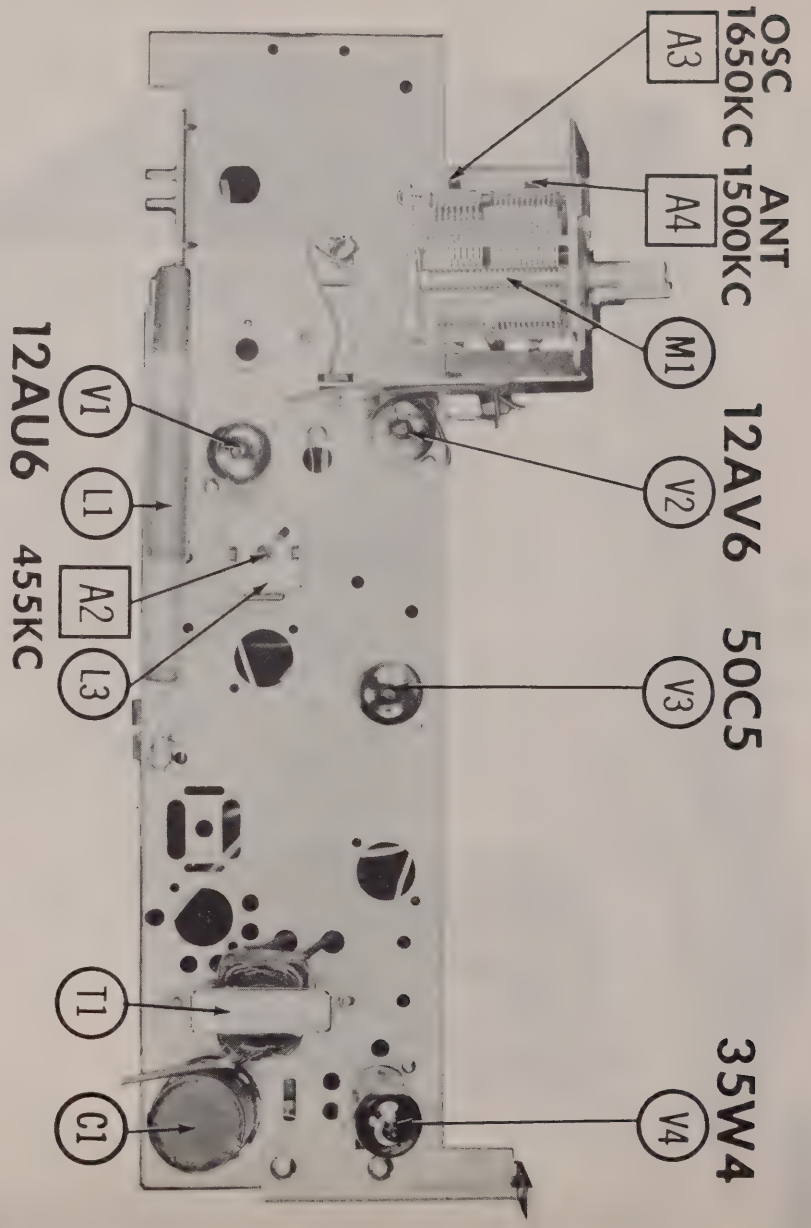
All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R2 | 2.2meg | |
| R3 | 6.8meg | |
| R4 | 150Ω | |
| R5 | 2200Ω | |
| R6 | 68Ω 2W | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | OLYMPIC PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Audio Coupling | 250mmf, 5000mmf, 250K, 500K | 166-109 | Aerovox PA-112-2<br>Centralab PC-71<br>Cornell-Dubilier 112TM2<br>Sprague T4 |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | OLYMPIC PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | Loopstick | 132-144 | | | | | | |
| L2 | Osc. Coil | 136-143 | | | | | | |
| L3 | IF Trans. | 130-106 | 16-6764 | 16-6764 | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | OLYMPIC PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 2500Ω | 3-4Ω | 138-140 | 24S53 | A-3025 | AU-605 | A-3332 | 24S53 | S-12X | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | OLYMPIC PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3-4Ω | 175-143 | 4A1 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | OLYMPIC PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap. | 160-134 | 2 Gang (Ant. 14-356mmf, Osc. 15-115mmf) |
| M2 | Clock | 207-118 | Telechron J-2 |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

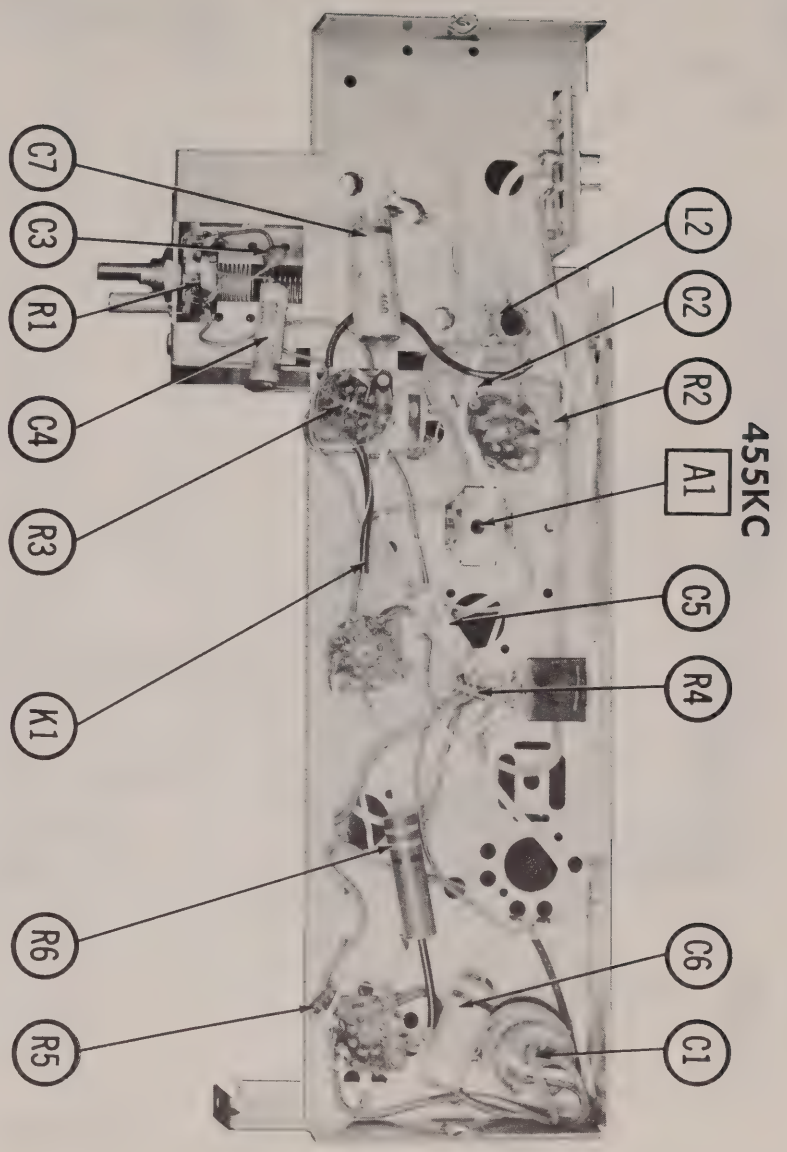
| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | 220-169 | Tuning |
| Knob | 220-158 | Volume |
| Knob | 220-170 | Clock |
| Cabinet Shell | 220166 | |
| Panel Insert | 205-142 | |

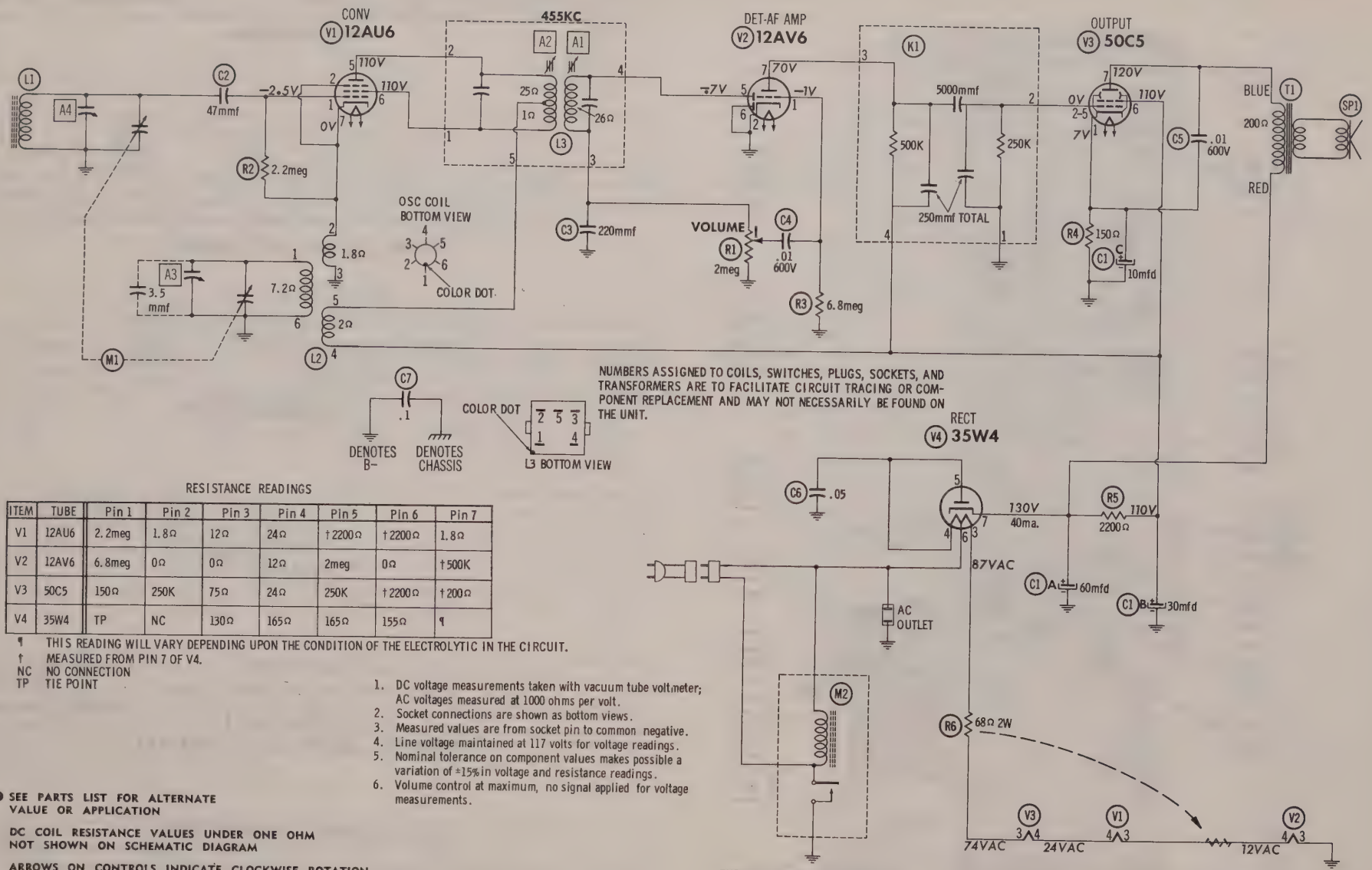
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

## CHASSIS BOTTOM VIEW






RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V1 | 12AU6 | 2.2meg | 1.8Ω | 12Ω | 24Ω | †2200Ω | †2200Ω | 1.8Ω |
| V2 | 12AV6 | 6.8meg | 0Ω | 0Ω | 12Ω | 2meg | 0Ω | †500K |
| V3 | 50C5 | 150Ω | 250K | 75Ω | 24Ω | 250K | †2200Ω | †200Ω |
| V4 | 35W4 | TP | NC | 130Ω | 165Ω | 165Ω | 155Ω | ¶ |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V4.
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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**OLYMPIC**
**MODEL 465**

PHOTOFACT* Folder

EIA MEMBER

# OLYMPIC MODEL 555

OLYMPIC
MODEL 555

| | |
|---|---|
| TRADE NAME | Olympic Model 555 |
| MANUFACTURER | Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N. Y. |
| TYPE SET | AC Operated 5 Tube AM Receiver With Electric Clock |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles |
| RATING | 26 Watts, .29 Amp. @117 Volts AC (Less Clock) |
| TUNING RANGE—BROADCAST | 535 — 1650KC |

OLYMPIC
MODEL 555

## ALIGNMENT INSTRUCTIONS

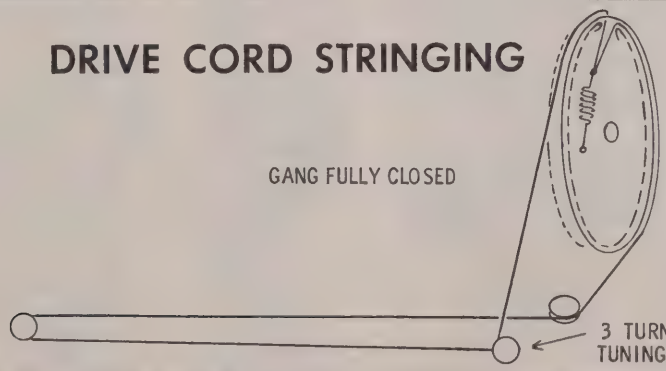
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A4.....GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6.....GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1mfd | High side to antenna section of tuning gang. Low side to chassis. | 455KC (400~ Mod.) | Tuning gang fully open | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | " | " | 1650KC | " | " | A5 | " |
| 3. | | Loop | 1500KC | 1500KC | " | A6 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 & 3. |

## DRIVE CORD STRINGING

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JG291

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ◆ CBS ◆ | | GENERAL ELECTRIC ◆ | | RAYTHEON ◆ | | SYLVANIA ◆ | |
|---|---|---|---|---|---|---|---|
| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
| V1 | Converter | 12BE6 | V4 | Output | 50C5 |
| V2 | IF Amplifier | 12BA6 | V5 | Rectifier | 35W4 |
| V3 | Det. -AVC-AF Amp. | 12AV6 | | | |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | OLYMPIC PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1A | 70 | 150 | 150-145 | PRS150V8040 | BBRD8415 | WD220 | TDLD-10 | TVA-2460 | |
| B | 30 | 150 | | | | | | | |

## FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C2 | .05 200V | | P288N-05 | DF-503 | CUB2S5 | 4DP-3-503 | GEM-415 | 2TM-S5 |
| C3 | 220 | | BPD-00022 | DD-221 | L10T22 | CCD-221 | B-322 | 5GA-T22 |
| C4 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S2 |
| C5 | .05 400V | | P488N-05 | DF-503 | CUB4S5 | 4DP-3-503 | GEM-415 | 4TM-S5 |
| C6 | .1 400V | | P488N-1 | DF-104 | CUB4P1 | 4DP-3-104 | GEM-401 | 4TM-P1 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | OLYMPIC PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1A | 500K | ½ | 180-152 | B-60 | A47-500K-Z | Q13-133 | U48 | Volume |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R2 | 2.2meg | |
| R3 | 22K | |

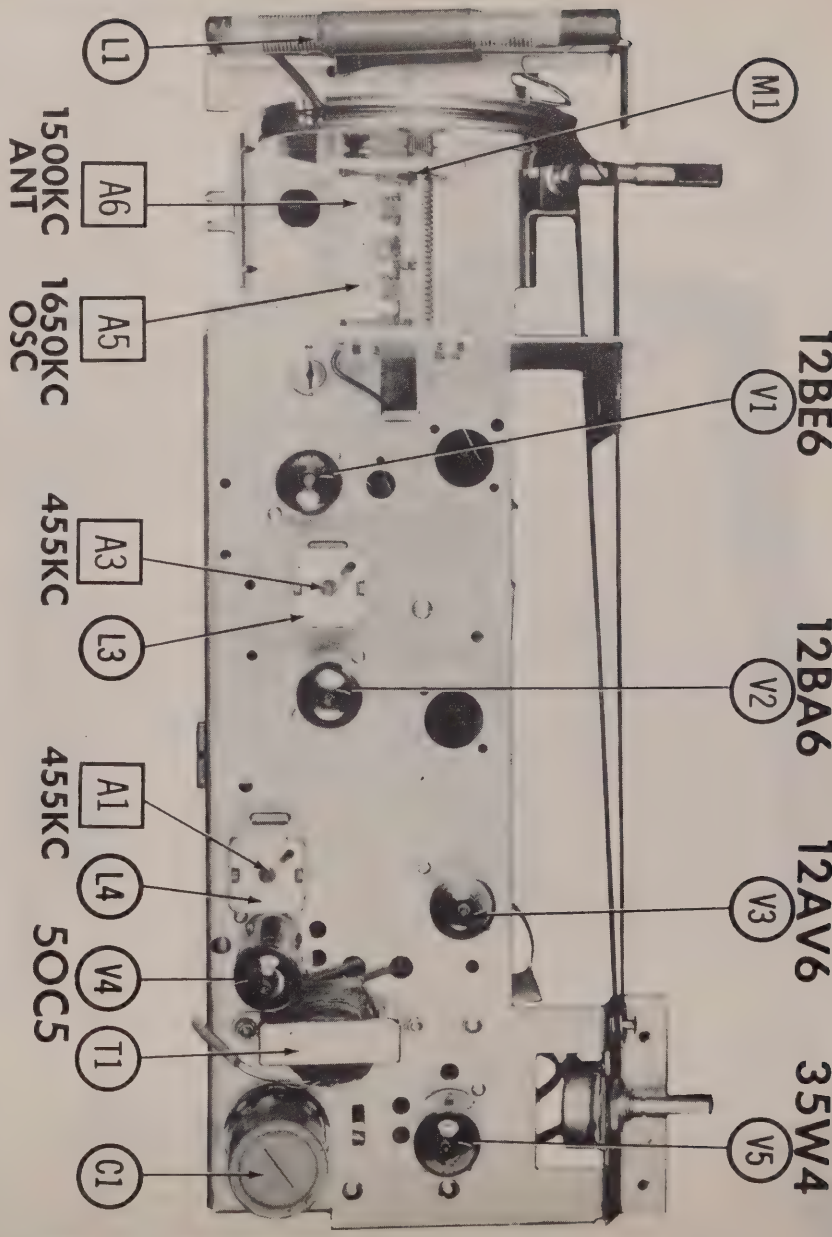
| ITEM No. | RATING | REMARKS |
|---|---|---|
| R4 | 2.2meg | |
| R5 | 150Ω | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R6 | 150Ω | |
| R7 | 1500Ω 1W | |

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | OLYMPIC PART No. | REPLACEMENT DATA | |
|---|---|---|---|---|---|
| K1 | Detector-Audio Coupling | 220mmf, 250mmf, (2) 5000mmf, (2) 470K, 6.8meg | 166-111 | Aerovox<br>Centralab<br>Cornell-Dubilier<br>Sprague | PA-113-2<br>PC-151<br>116TM2<br>DT-2 |

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | OLYMPIC PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | Loopstick | 132-143 | | | | | | |
| L2 | Osc. Coil | 136-141 | | | | | | |
| L3 | Input IF | 130-114 | 16-6758 | 16-6758 | BC-352 | 12-C1 | RF-1 | |
| L4 | Output IF | 130-114 | 16-6758 | 16-6758 | BC-353 | 12-C2 | RF-2 | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | OLYMPIC PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 2400Ω | 3-4Ω | 138-139 | 24S53 | A-3025 | AU-605 | A-3332 | 24S53 | S-12X | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | OLYMPIC PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3-4Ω | 175-143 | 4A07 | |

## MISCELLANEOUS

| ITEM No. | PART NAME | OLYMPIC PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap | 160-132-C | 2 Gang (Ant. 35— 382mmf, Osc. 15—103mmf) |
| M2 | Clock | 207-117 | Telechron J-3 |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

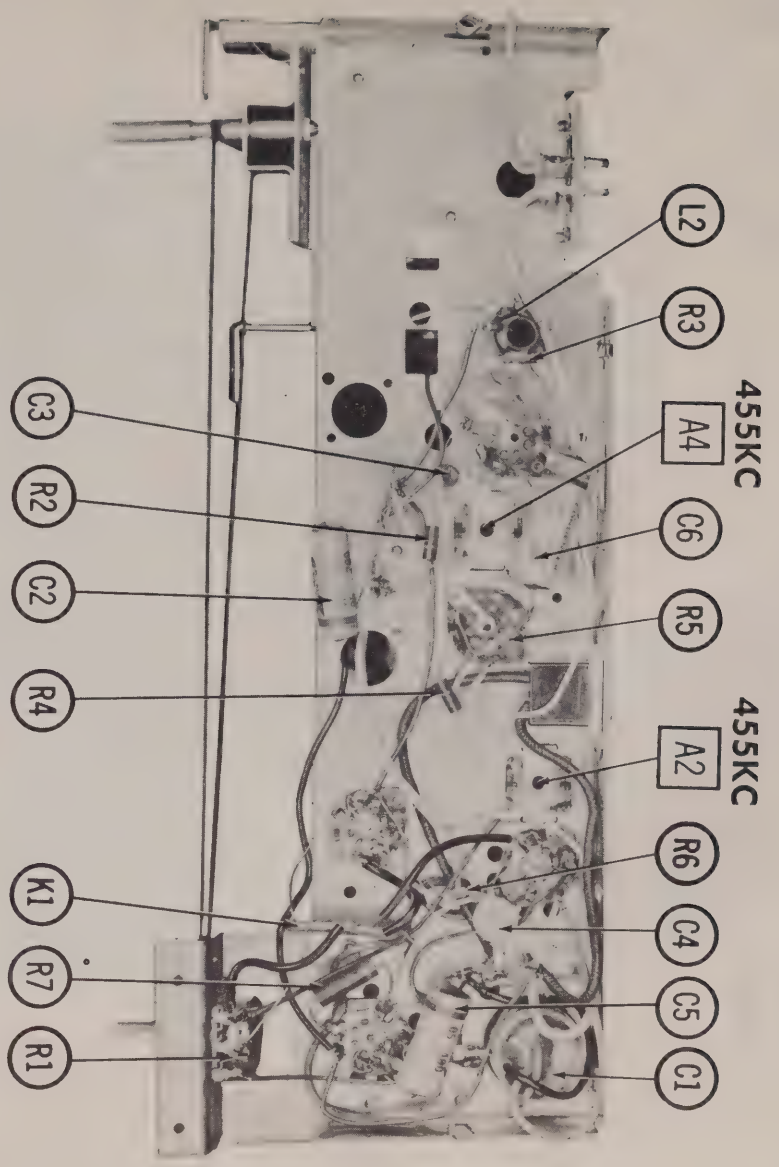
| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | 220-158 | Tuning - Volume |
| Knob | 220-168 | Clock |
| Cabinet | 210-165 | |
| Dial Pointer | 140-135 | |

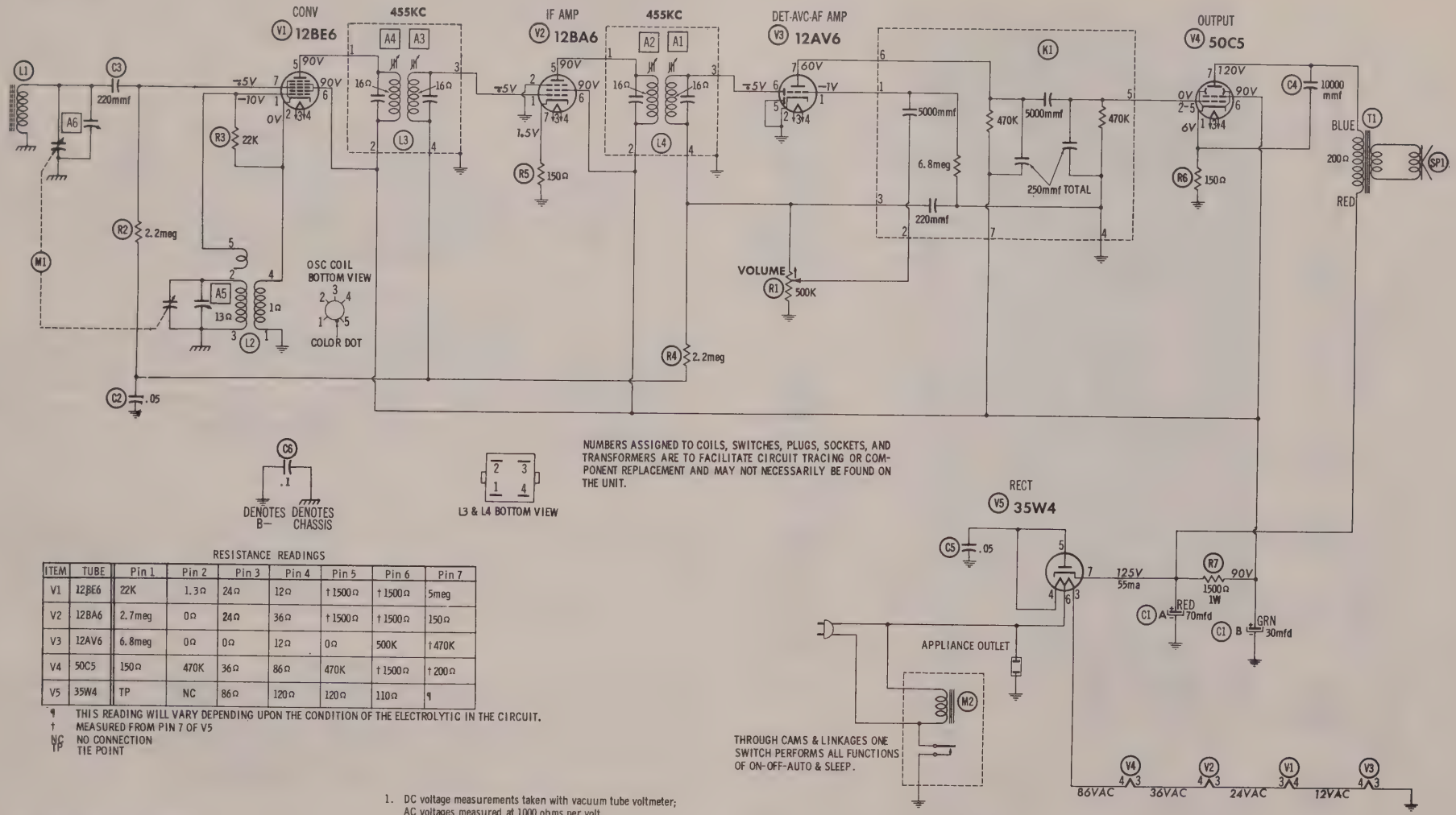
## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

## CHASSIS BOTTOM VIEW






RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|---|---|---|---|---|---|---|---|---|
| V1 | 12BE6 | 22K | 1.3Ω | 24Ω | 12Ω | †1500Ω | †1500Ω | 5meg |
| V2 | 12BA6 | 2.7meg | 0Ω | 24Ω | 36Ω | †1500Ω | †1500Ω | 150Ω |
| V3 | 12AV6 | 6.8meg | 0Ω | 0Ω | 12Ω | 0Ω | 500K | †470K |
| V4 | 50C5 | 150Ω | 470K | 36Ω | 86Ω | 470K | †1500Ω | †200Ω |
| V5 | 35W4 | TP | NC | 86Ω | 120Ω | 120Ω | 110Ω | ¶ |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION
TP TIE POINT

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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**OLYMPIC**
**MODEL 555**

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

# PHILCO MODELS G-1708S, G-1806S, G-1807S, G-1808S, G-1809S, G-1811S, G-1813S, SA-2000

PHILCO MODELS G-1708S, G-1806S, G-1807S, G-1808S, G-1809S, G-1811S, G-1813S, SA-2000

PHILCO MODELS G-1708S, G-1806S, G-1807S, G-1808S, G-1809S, G-1811S, G-1813S, SA-2000

MODEL G-1808S

| | |
|---|---|
| TRADE NAME | Philco Models G-1708S, G-1806S, G-1807S*, G-1808S, G-1809S*, G-1811S*, G-1813S*, SA-2000 |
| MANUFACTURER | Philco Corp., Tioga & "C" Streets, Philadelphia, Pa. |
| TYPE SET | AC Operated 8 Tube FM-AM Tuner * and 6 Tube Amplifier With 4 Speed Automatic Record Changer |
| POWER SUPPLY | 105-120 Volts AC, 60 Cycles RATING 74 Watts, .73 Amp. @ 117 Volts AC (Amp. only) |

* FOR SERVICE INFORMATION ON RT-202 FM-AM TUNER — SEE FOLDER 17 IN THIS PHOTOFACT SET

FOR SERVICE INFORMATION ON RECORD CHANGER M-41 — SEE SIMILAR V-M 959 — PHOTOFACT SET 396 FOLDER 13

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JS293

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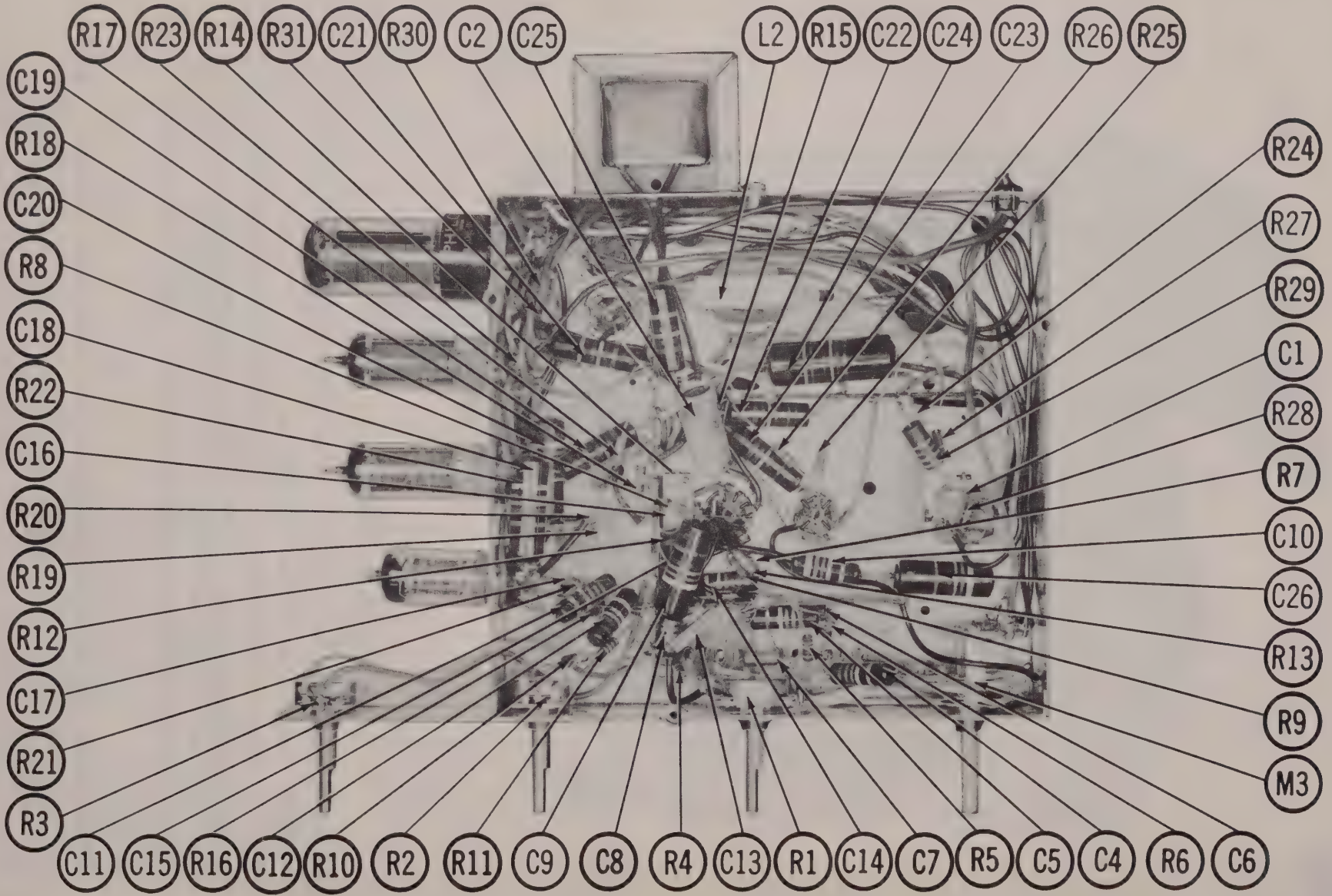
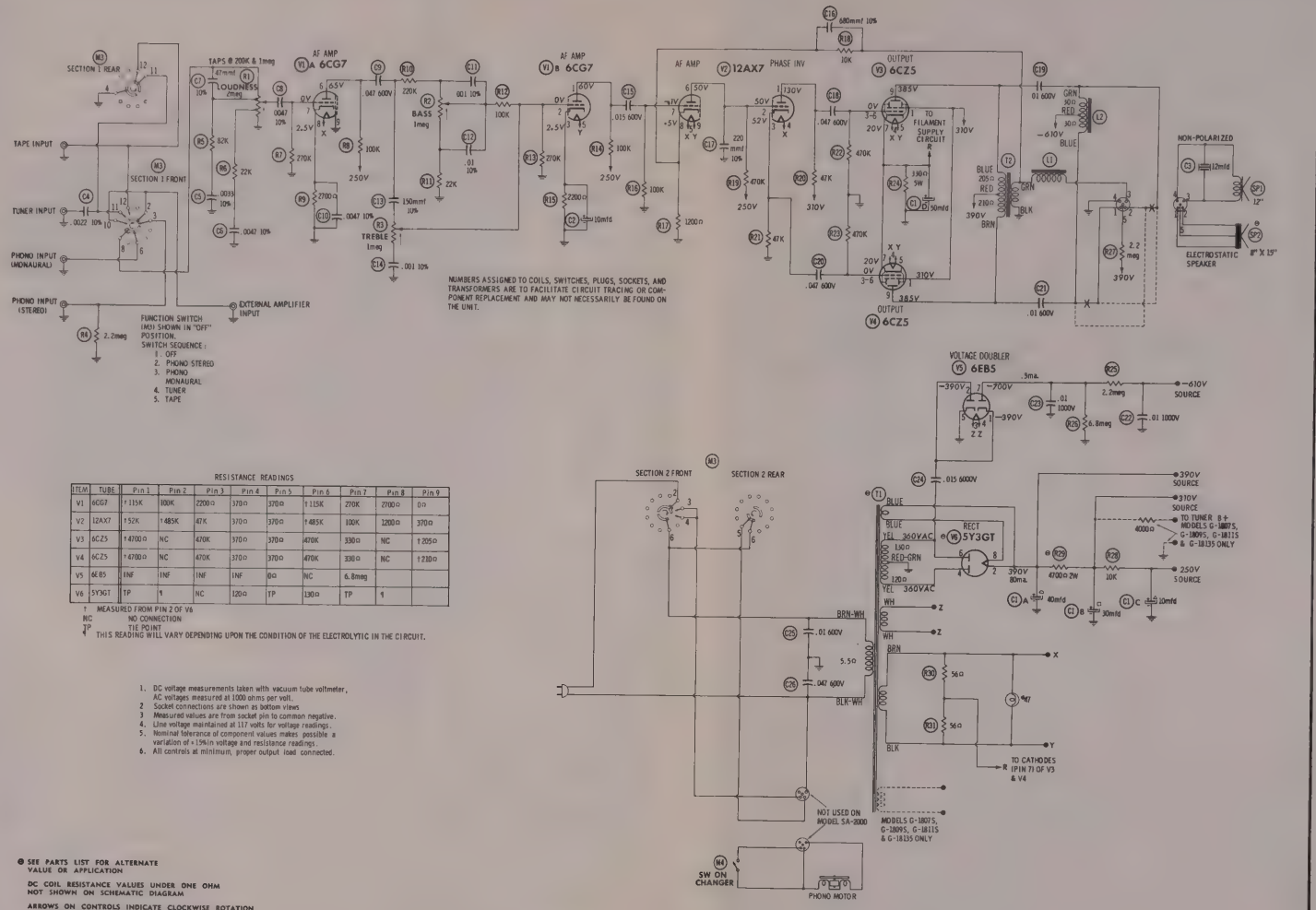



CHASSIS BOTTOM VIEW




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 6CG7 | †115K | 100K | 2200Ω | 370Ω | 370Ω | †115K | 270K | 2700Ω | 0Ω |
| V2 | 12AX7 | †52K | †485K | 47K | 370Ω | 370Ω | †485K | 100K | 1200Ω | 370Ω |
| V3 | 6CZ5 | †4700Ω | NC | 470K | 370Ω | 370Ω | 470K | 330Ω | NC | †205Ω |
| V4 | 6CZ5 | †4700Ω | NC | 470K | 370Ω | 370Ω | 470K | 330Ω | NC | †210Ω |
| V5 | 6EB5 | INF | INF | INF | INF | 0Ω | NC | 6.8meg | | |
| V6 | 5Y3GT | TP | ¶ | NC | 120Ω | TP | 130Ω | TP | ¶ | |

† MEASURED FROM PIN 2 OF V6
NC NO CONNECTION
TP THE POINT
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊛ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1959

**PHILCO MODELS G-1708S, G-1806S, G-1807S, G-1808S, G-1809S, G-1811S, G-1813S, SA-2000**

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | AF Amplifier | 6CG7 |
| V2 | AF Amp. -Phase Inv. | 12AX7 |
| V3 | Output | 6CZ5 |

| ITEM No. | USE | TYPE |
|---|---|---|
| V4 | Output | 6CZ5 |
| V5 | Voltage Doubler | 6EB5 |
| V6 | Rectifier | 5Y3GT (5U4GB*) |

* Used in Models G-1807S, G-1809S, G-1811S, G-1813S

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | PHILCO PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1A | ▲40 | 450 | 30-2584-36 | AFH4-85-25 | C0373 | FP431.3 | TMQ-92 | TVL-4734 | |
| B | ■30 | 450 | | | BR505 | | TD-50-50 | TVA-1308 | |
| C | ▲10 | 450 | | | | | | | |
| D | 50 | 50 | | | | | | | |
| C2 | 10 | 25 | 30-2417-9 | PRS25V10 | BBR10-25 | TC22 | TD-10-25 | TVA-1204 | |
| C3 | 12 | 25NP | 30-2593-1 | NP-PRS25VN P10 | BBR25-50 † | TCN5010 | | TVAS-1204.3* | |

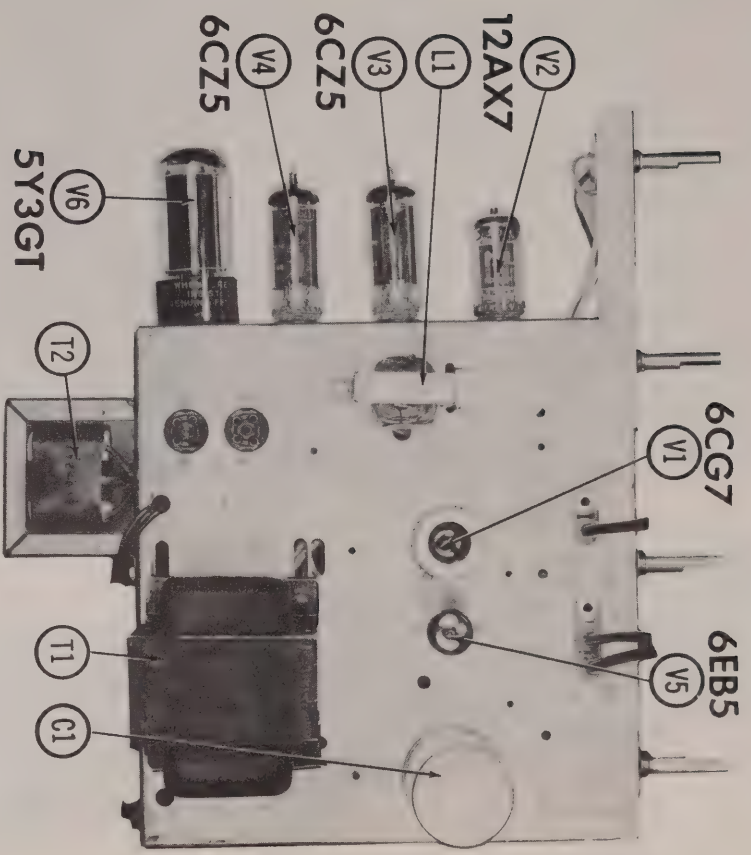
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C4 | .0022 400V 10% | | V84C4D22 | | PM6D22 | 6DP-1-222 | GTM-4222 | 6TM-D22 |
| C5 | .0033 400V 10% | | V84C4D33 | | PM6D33 | 6DP-1-332 | GTM-4233 | 6TM-D33 |
| C6 | .0047 400V 10% | | V84C4D47 | | PM6D47 | 6DP-1-472 | GTM-4247 | 6TM-D47 |
| C7 | 47 10% | | 1469-000047 | D6-470 | 22R5Q47 | CM-20B-470K | MCB225 | MS-447 |
| C8 | .0047 400V 10% | | V84C4D47 | | PM6D47 | 6DP-1-472 | GTM-4247 | 6TM-D47 |
| C9 | .047 600V | | P688N-047 | DF-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C10 | .0047 400V 10% | | V84C4D47 | | PM6D47 | 6DP-1-472 | GTM-4247 | 6TM-D47 |
| C11 | .001 400V 10% | | | | PM6D1 | 6DP-1-102 | GTM-421 | 4TM-D1 |
| C12 | .01 400V 10% | | V84C4S1 | | PM4S1 | 4DP-1-103 | GTM-411 | 4TM-S1 |
| C13 | 150 10% | | 1469-00015 | D6-151 | 22R5T15 | CM-20B-151K | MCB236 | MS-315 |
| C14 | .001 400V 10% | | | | PM6D1 | 6DP-1-102 | GTM-421 | 4TM-D1 |
| C15 | .015 600V | | P688N-015 | DD16-153 | CUB6S15 | 6DP-2-153 | GEM-6115 | 6TM-S15 |
| C16 | 680 10% | | 1469-00068 | D6-681 | 1R5T68 | CM-20B-681K | | MS-368 |
| C17 | 220 10% | | 1469-00022 | D6-221 | 22R5T22 | CM-20B-221K | | MS-322 |
| C18 | .047 600V | | P688N-047 | DF-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## CAPACITORS (cont)

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C19 | .01 600V | | P688N-01 | D6-103 | CUB6S1 | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C20 | .047 600V | | P688N-047 | DF-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C21 | .01 600V | | P688N-01 | D6-103 | CUB6S1 | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C22 | .01 1000V | | P1088N-01 | DD16-103 | CUB10S1 | 16DP-3-103 | GEM-1011 | 10TM-S1 |
| C23 | .01 1000V | | P1088N-01 | DD16-103 | CUB10S1 | 16DP-3-103 | GEM-1011 | 10TM-S1 |
| C24 | .015 6000V | | | | | | | |
| C25 | .01 600V | | P688N-01 | D6-103 | CUB6S1 | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C26 | .047 600V | | P688N-047 | DF-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | PHILCO PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1 | 2meg 200K & 1meg Taps | ½ | 33-5535-47 | | | | | Loudness |
| R2A | 1meg | ½ | 33-5587-29 | B-70 | A47-1meg-Z | Q13-137 | U53 | Bass |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R3A | 1meg | ½ | 33-5587-29 | B-70 | A47-1meg-Z | Q13-137 | U53 | Treble |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R4 | 2.2meg | |
| R5 | 82K | |
| R6 | 22K | |
| R7 | 270K | |
| R8 | 100K | |
| R9 | 2700Ω | |
| R10 | 220K | |
| R11 | 22K | |
| R12 | 100K | |
| R13 | 270K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R14 | 100K | |
| R15 | 2200Ω | |
| R16 | 100K | |
| R17 | 1200Ω | |
| R18 | 10K | |
| R19 | 470K | |
| R20 | 47K | |
| R21 | 47K | |
| R22 | 470K | |
| R23 | 470K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R24 | 330Ω 5W | |
| R25 | 2.2meg | |
| R26 | 6.8meg | |
| R27 | 2.2meg | |
| R28 | 10K | |
| R29 | 4700Ω 2W | Note 1 |
| R30 | 56Ω | |
| R31 | 56Ω | |

Note 1. Models G-1807S, G-1809S, G-1811S, and G-1813S use 1500Ω 2W in this application.

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | PHILCO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V@ .73A | 720 VCT @.080A | 5V@ 2A | 32-8846-1 ① | | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3V@ .3A | 6.3V@ 1.9A | | | | | | | | |

① Part #32-8854-1 used in Models G-1807S, G-1809S, G-1811S, and G-1813S.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | PHILCO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 5500Ω CT | 6-8Ω | 32-8847-1 | 22S58 | A-2901 ① | AU-609 | A-3870 | 22S58 | S-55X | ① Drill New Mounting Hole |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | PHILCO PART No. | QUAM PART No. | |
| SP1 SP2 | 12" 8"x 15" | PM ELECTROSTATIC | 6-8Ω | 36-1678-1 36-1674 ① | 12A31PA | ① Two used in Model G-1811S |

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000 ~) | PHILCO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| L1 L2 | | .5Ω 60Ω CT | .0025 HY 1.5 HY | 32-8851-1 32-8848-1 | | | | | | |

## PHONO CARTRIDGE

| ITEM No. | REPLACEMENT DATA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PHILCO PART No. | ASTATIC PART No. | | ELECTRO-VOICE PART No. | | JENSEN PART No. | | SONOTONE PART No. | |
| | | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE |
| M1 | 325-8036 | 13-TB * | Not Req. | | | 66 † | Not Req. | 8T-S * | Not Req. |

* Includes mounting.
† Use PT-3 mount.

## PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

| ITEM No. | REPLACEMENT DATA | | | REMARKS |
|---|---|---|---|---|
| | PHILCO PART No. | CLEVITE WALCO PART No. | JENSEN PART No. | |
| M2 | 325-8233 (78) † | E98 † or E98D ♦ | * W101STS † or * W101STD †♦ or * W102S † | † Jewel ♦ Diamond * Includes Cartridge |
| | 325-8232 (LP) ♦ | E98X † or E98XD †♦ | | |

## MISCELLANEOUS

| ITEM No. | PART NAME | PHILCO PART No. | NOTES |
|---|---|---|---|
| M3 | Switch | 42-2093-1 | Function, Off-Stereo-Monaural-Tuner-Stereo Tape |
| M4 | Switch | | Off-On (Motor) |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Bezel | 28-12232-4 | Model G-1708S |
| Bezel | 28-12232-3 | Model G-1806S, G-1807S, G-1808S, G-1809S |
| Knob | 54-6271-4 | 4 Used, Model G-1708S |
| Knob | 54-6271 | 4 Used, Models G-1806S, 6-1807S, G-1808S, G-1809S, G-1813S, G-1811S |
| Knob | 54-6035-14 | Selector, Models G-1807S, G-1809S, G-1813S |
| Knob | 54-6035-2 | Tuning, Models G-1807S, G-1809S, G-1813S |
| Knob | 54-4773-36 | Selector, Early Production of G-1811S |
| Knob | 54-6035-14 | Selector, Later Production of G-1811S |
| Knob | 54-4773-23 | Tuning, Early Production of G-1811S |
| Knob | 54-6035-2 | Tuning, Later Production of G-1811S |
| Knob | 54-6093-22 | 4 Used, Model SA-2000 |
| Dial Scale | 54-5390 | Models G-1807S, G-1809S |
| Dial Scale | 54-5428 | Model G-1813S |
| Dial Scale | 54-5404-1 | Model G-1811S |

## WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder with CIRCUITRACE*

# PHILCO MODELS G-1906S, G-1907S, RSB-10, RT-202 Series, SA-3000

PHILCO MODELS G-1906S, G-1907S, RSB-10, RT-202 Series, SA-3000

MODEL G-1907S

PHILCO MODELS G-1906S, G-1907S, RSB-10, RT-202 Series, SA-3000

| | | | |
|---|---|---|---|
| TRADE NAME | Philco Models G-1906S, G-1907S (Codes 121, 123); RT-202, RT-202-1, RT-202-2, RT-202-3, RT-202-4; RSB-10, SA-3000 | | |
| MANUFACTURER | Philco Corp., Tioga & "C" Streets, Philadelphia, Pa. | | |
| TYPE SET | AC Operated 8 Tube FM-AM Tuner, 6 Tube Amplifier and 4 Speed Automatic Record Changer (G-1906S and SA-3000 are Phonographs only, RT-202 Series are Tuners Only, RSB-10 is Remote Stereo Balance Control) | | |
| POWER SUPPLY | 105-120 Volts AC, 60 Cycles | RATING | 127 Watts, 1.28 Amp. @ 117 Volts AC (Less Phono) |
| TUNING RANGE | BROADCAST 540 - 1620KC | FREQ. MOD. | 88 - 108MC |

FOR SERVICE INFORMATION ON RECORD CHANGER M-41 - SEE SIMILAR V-M 1201 - PHOTOFACT SET 436 FOLDER 18

**HOWARD W. SAMS & CO., INC.** Indianapolis 6, Indiana

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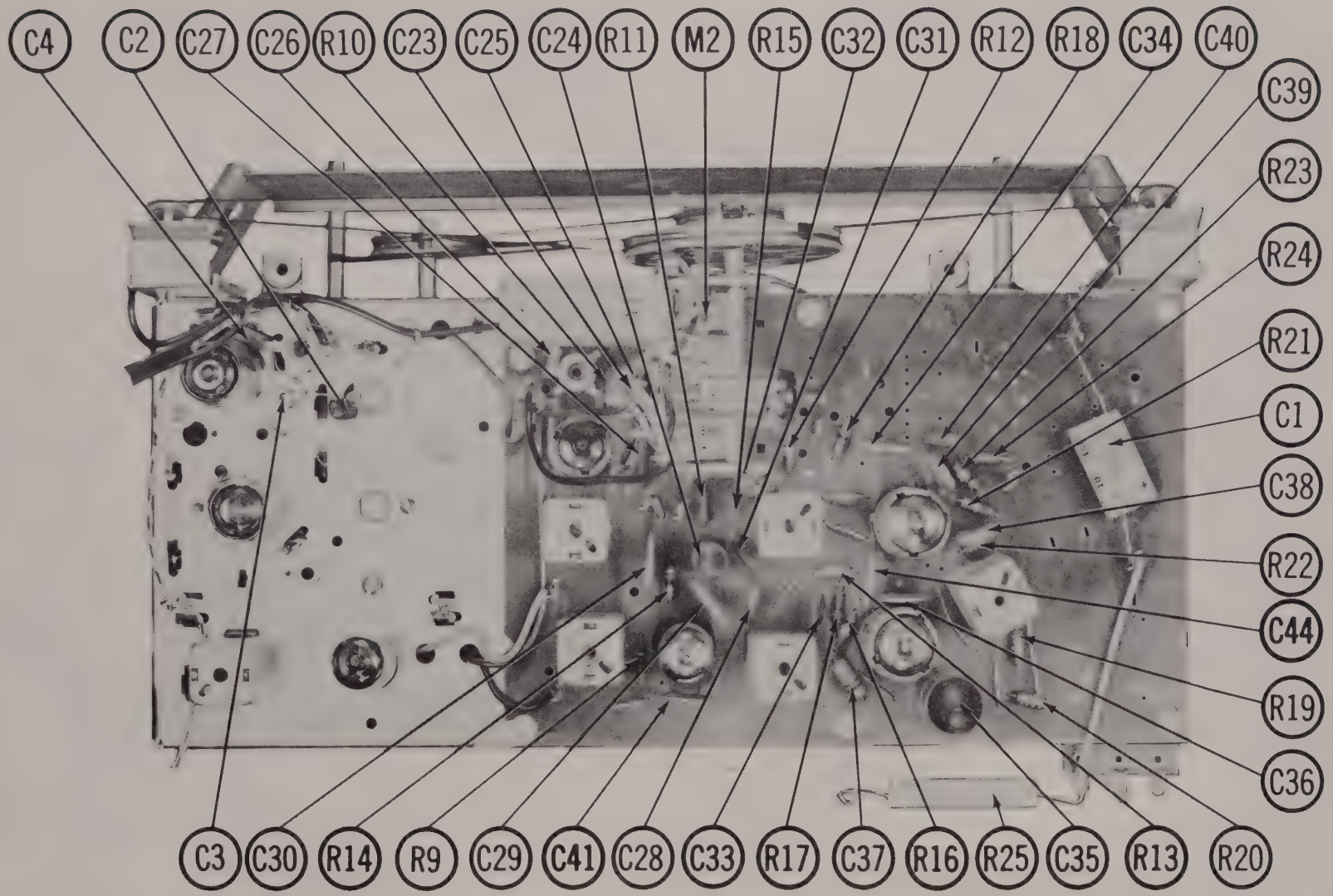
JN345



SET 464 FOLDER 17




TUNER CHASSIS TOP VIEW - CAPACITOR, RESISTOR & MISC. IDENT.

# TUNER PARTS LIST AND DESCRIPTIONS

## TUBES

• CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

| ITEM No. | USE | TYPE |
|---|---|---|
| V1 | FM RF Amplifier | 6BZ6 |
| V2 | FM Converter | 6AB4 |
| V3 | 1st FM IF Amplifier | 6BA6 |
| V4 | AM RF Amplifier | 6BA6 |
| V5 | AM Converter | 6BE6 |
| V6 | 2nd FM-1st AM IF Amp. | 6BA6 |
| V7 | FM Limiter | 6BY8 |
| V8 | Discriminator-AM Det. - AVC | 6BJ7 |

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT. | PHILCO PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
| C1 | 10 | 150 | 30-2596-1 | PRS1410 | BBR10-150 | TC42 | TD-10-150 | TVA-1406 | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C2 | 100 5% | | ADM-15-101 | DTZ-100 | 22R5T1 | CM-20B-101J | MCE235 | MS-31 |
| C3 | 1-5 | #31-6520-14 | | 829-6 | | | CT55l | |
| C4 | 100 | | 1469-0001 | DD-101 | 22R5T1 | CM-20B-101M | MCE235 | MS-31 |
| C5 | 1000 10% | | | D6-102 | PM6D1 | CCS-102 | GTM-621 | 10TS-D10 |
| C6 | 150 5% | | ADM-15-151 | TCZ-150 | 22R5T15 | CM-20B-151J | MCE236 | MS-315 |
| C7 | 680 10% | | ADM-19-681 | DD-681 | 1R5T68 | CM-20B-681J | JL-368 | MS-368 |
| C8 | 1000 10% | | | D6-102 | PM6D1 | CCS-102 | GTM-621 | 10TS-D10 |
| C9 | 100 10% | | NPO-SI 100 | D6-101 | L10T1 | CCD-101 | ZT-531 | 10TS-T10 |
| C10 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C11 | 150 10% | | 1469-00015 | DD-151 | 22R5T15 | CM-20B-151K | MCE236 | MS-315 |
| C12 | 3.3 N750 | | N750-SI 3.3 | TCZ-3R3 | C10V33U | | CN7-533 | 10TCU-V33 |
| C13 | .5-3 | #31-6520-18 | | 829-3 | | CV-1 | CT565 | |
| C14 | 180 5% | | ADM-15-181 | TCZ-180 | C10T18C | CM-20B-181J | | 10TCC-T18 |
| C15 | 10 NPO 5% | | | TCZ-10 | C10Q1C | CM-15-C-100J | CNO-410 | 10TCC-Q10 |
| C16 | 12 NPO 5% | | | TCZ-12 | C10Q12C | CM-15-C-100J | CNO-412 | 10TCC-Q12 |
| C17 | 10 NPO 5% | | | TCZ-10 | C10Q1C | CM-15-C-100J | CNO-410 | 10TCC-Q10 |
| C18 | 5000 | | BPD-005 | DD-502 | BYA10D5 | CCD-502 | B-250 | 10TS-D50 |
| C19 | 1000 10% | | | DD-102 | PM6D1 | CCS-102 | JL-210 | 10TS-D10 |
| C20 | 100 10% | | NPO-SI 100 | D6-101 | C10T1C | CCD-101 | CNO-310 | 10TS-T10 |
| C21 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C22 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C23 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C24 | .047 200V | | P2151N-047 | DD-503 | BC2S47J | 4DP-3-473 | ACE6147 | 2SE-S47 |
| C25 | 47 | | SI 47 | D6-470 | L10Q47 | CCD-470 | CNO-447 | 10TS-Q47 |
| C26 | 7.5 N2200 10% | #30-1224-83 | | | | * | | |
| C27 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C28 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 10TS-D10 |
| C29 | 4700 | | BPD-0047 | DD-472 | BYA10D47M | CCD-472 | B-247 | 10TS-D47 |
| C30 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C31 | 220 | | BPD-00022 | DD-221 | L10T22 | CCD-221 | B-322 | 10TS-T22 |
| C32 | 220 | | BPD-00022 | DD-221 | L10T22 | CCD-221 | B-322 | 10TS-T22 |
| C33 | 22 | | BPD-000022 | DD-220 | L10Q22 | CCD-220 | CNO-422 | 10TS-Q22 |
| C34 | 4700 | | BPD-0047 | DD-472 | BYA10D47M | CCD-472 | B-247 | 10TS-D47 |
| C35 | .47 200V | | P2151N-47 | | BC2P47J | 2DP-5-474 | GEM-2047 | 2SE-P47 |
| C36 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C37 | 680 10% | | | D6-681 | | CCS-681 | JL-368 | 10TS-T68 |
| C38 | 33 | | BPD-000033 | DD-330 | L10Q33 | CCD-330 | CNO-433 | 10TS-Q33 |
| C39 | 150 | | BPD-00015 | DD-151 | L10T15 | CCD-151 | B-315 | 10TS-T15 |
| C40 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 10TS-D10 |
| C41 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C42 | 18000 *(22000mmf or 47000mmf) | | BPD-02 | DD-203 | BYB6S2 | CCD-203 | B-120 | 5HK-S20 |
| C43 | 10000 | ① | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C44 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |
| C45 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 10TS-S10 |

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Not used in some versions.
# Philco Part Number.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R1 | 1meg | |
| R2 | 220K | |
| R3 | 1500Ω | |
| R4 | 6800Ω | |
| R5 | 100Ω | |
| R6 | 1meg | |
| R7 | 6800Ω | |
| R8 | 1meg | |

Note 1. Not used in some versions.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R9 | 220Ω | |
| R10 | 22K | |
| R11 | 2.2meg | |
| R12 | 470K | |
| R13 | 220Ω | |
| R14 | 68Ω | |
| R15 | 47K | |
| R16 | 100K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R17 | 1meg | |
| R18 | 1meg | |
| R19 | 15K | |
| R20 | 68K | |
| R21 | 22K | |
| R22 | 22K | |
| R23 | 100K | |
| R24 | 2200Ω | |
| R25 | 4000Ω 7W | Note 1 |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|
| | | PHILCO PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | |
| L1 | FM Ant. Trans. | 32-4751-1 | | | | | | |
| L2 | FM RF Coil | 32-4717-2 | | | | | | |
| L3 | Fil. Choke | 32-4422-8 | 19-1002 | 19-1002 | BC-563 | 4606 | | 2.2uh ① |
| L4 | FM Osc. Coil | 32-4716-1 | | | | | | |
| L5 | Loop Ant. | 32-4692-4 | | | | | | ② |
| L6 | AM RF Trans. | 32-4399-8 | | | | | | |
| L7 | AM Osc. Coil | 32-4693-9 | | | | | | |
| L8 | 1st FM IF | 32-4715-1 | 16-3487 | 16-3487 | FM-254 | 1463 | | |
| L9 | 1st AM IF | 32-4583-17 | 16-6780 | 16-6780 | BC-356 | 13-PC1 | RF-4 | |
| L10 | 2nd FM IF | 32-4712-1 | 16-3490 | 16-3490 | | 1463-PC | | |
| L11 | 2nd AM IF | 32-4583-17 | 16-6780 | 16-6780 | BC-357 | 13-PC2 | RF-4 | |
| L12 | 3rd FM IF | 32-4712-2 | 16-3490 | 16-3490 | | 1463-PC | | |
| L13 | Discriminator | 32-4752-1 | 17-3491 | 17-3491 | | 1464-PC | | |
| L14 | Crossover Choke | | | | | | | 1.2MH ③ |
| L15 | Crossover Choke | | | | | | | 1.2MH ③ |

① IRC Part #CLA.
② Chassis RT-202-2 uses loop antenna Part #32-4692-6.
③ Not used in some versions.

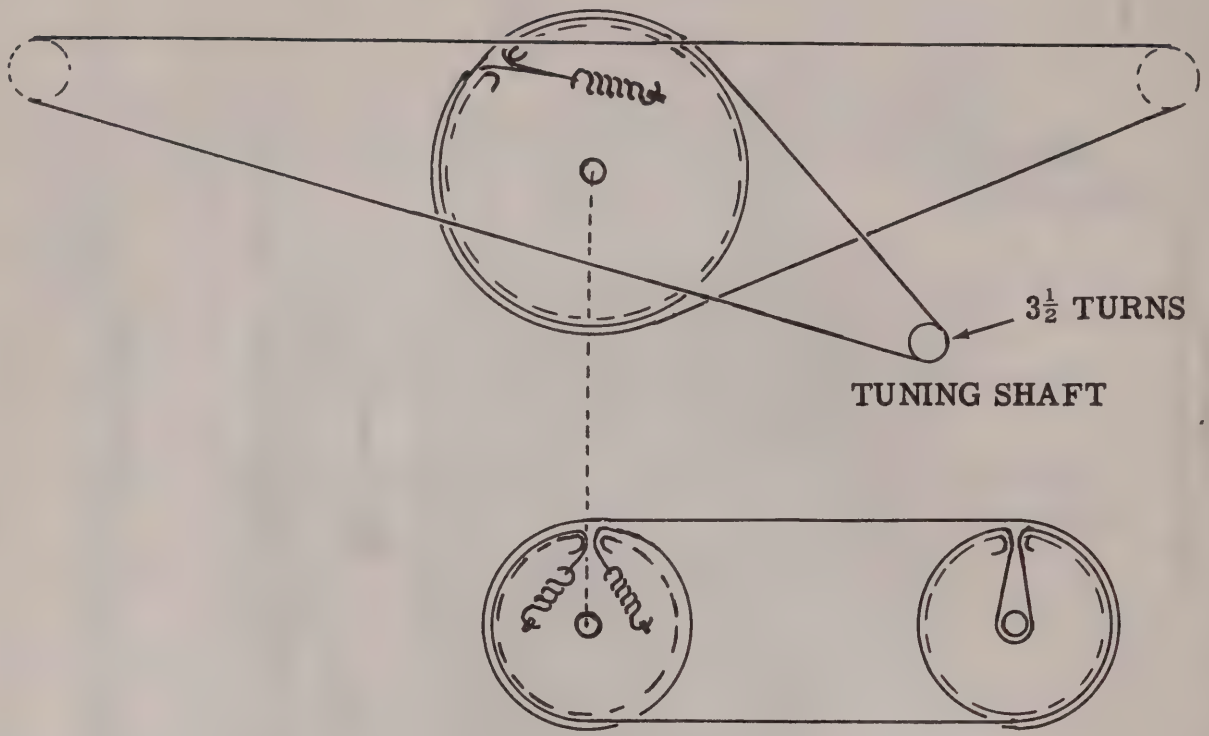
## MISCELLANEOUS

| ITEM No. | PART NAME | PHILCO PART No. | NOTES |
|---|---|---|---|
| M1 | Tuning Cap. | 31-2789-1 | FM, 3 Gang |
| M2 | Tuning Cap. | 31-2787-4 | AM, 3 Gang (Ant. 15-375mmf, RF 15-260mmf, Osc. 14-129mmf) |
| M3 | Switch | 42-2065-1 | FM-AM |
| | Printed Board | 54-9961-6 | Tuner |

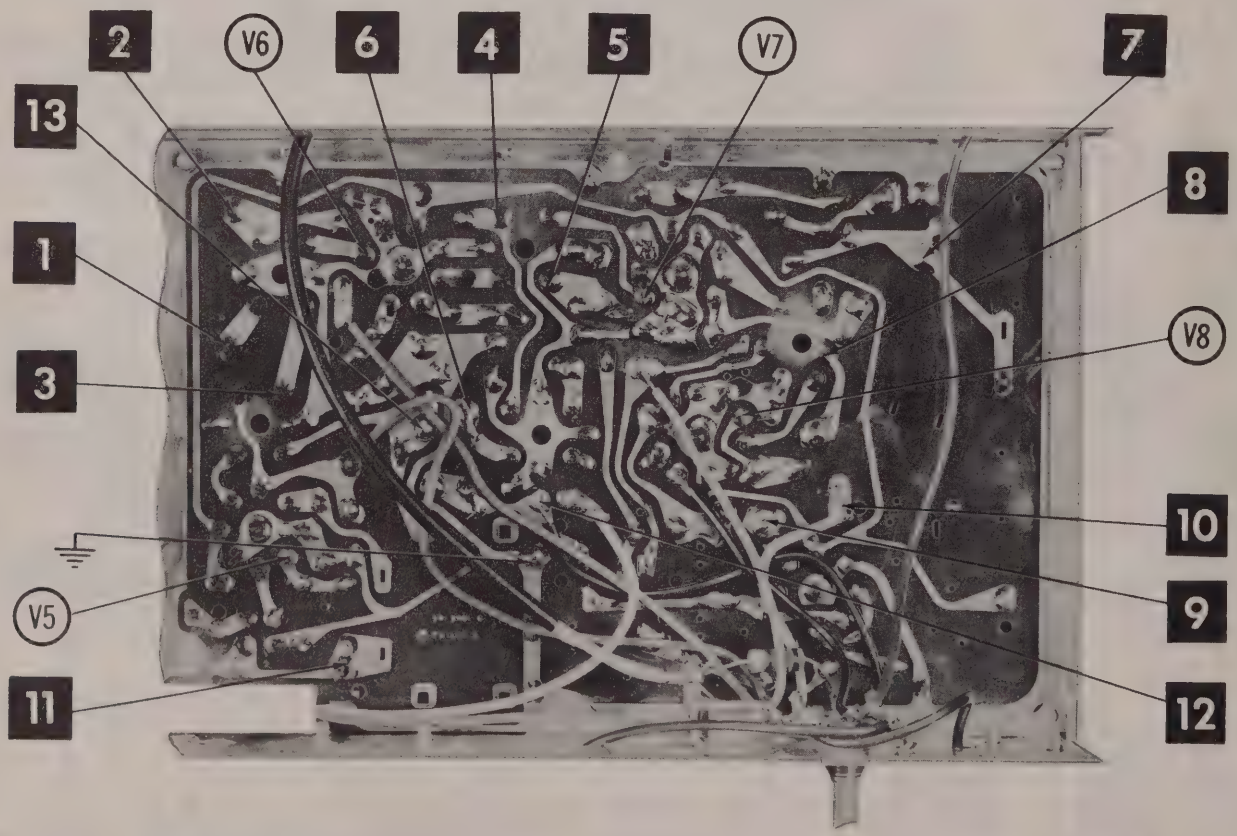
## WIRING DATA

| | |
|---|---|
| General-use Unshielded Hook-up Wire | Use BELDEN No. 8530 (Solid) Available in Ten Colors<br>8524 (Stranded) Available in Ten Colors |
| Power Cord | Use BELDEN No. 1765-B (6 Ft. Length)<br>1725-K (7½ Ft. Length) |
| Low-Loss Shielded Lead (Interconnecting) | Use BELDEN No. 8401 |
| Phono Pick-up Arm Cable | Use BELDEN No. 8430 (Two Conductor - Twisted) |

## DIAL CORD STRINGING



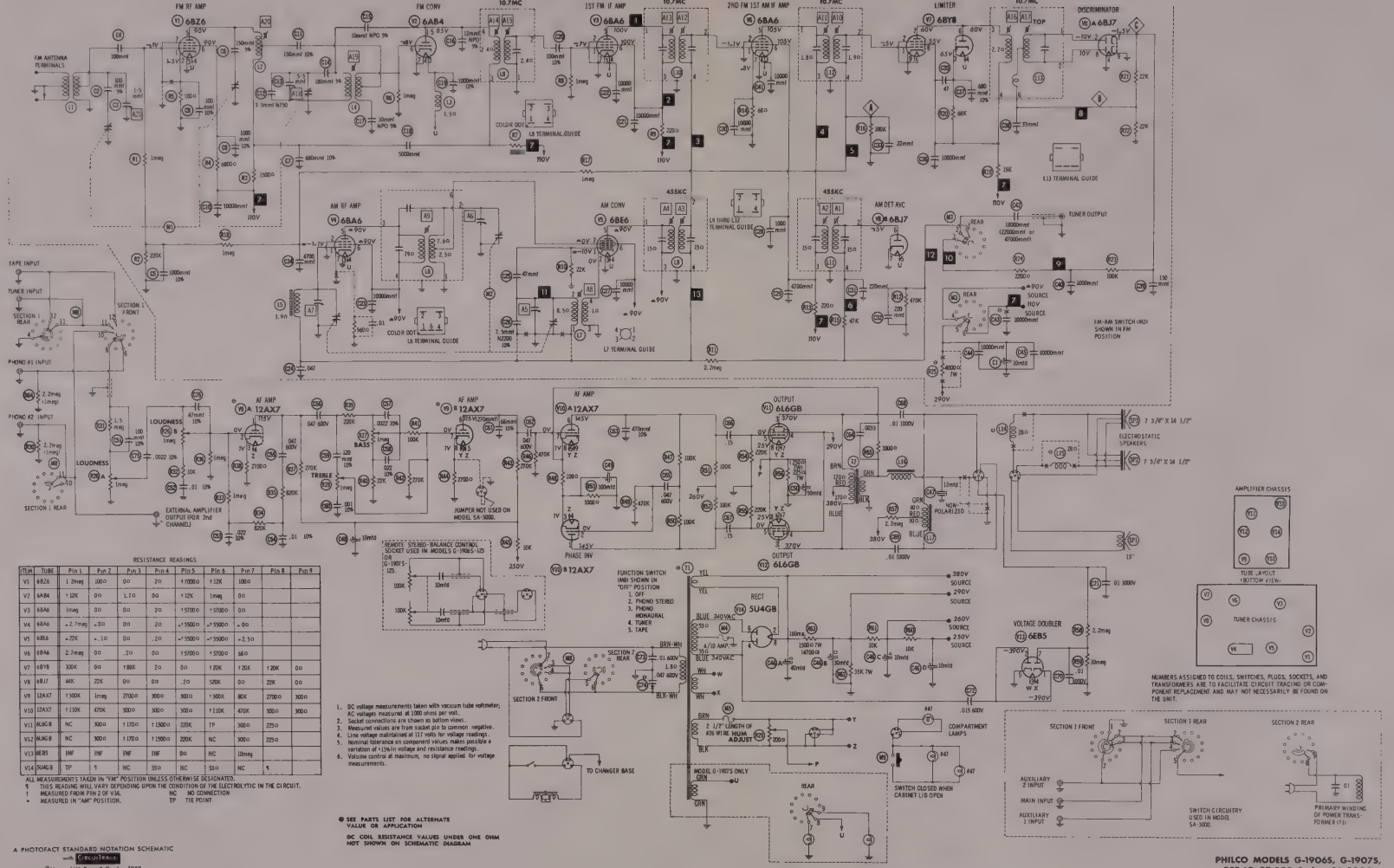

FRONT VIEW




A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | 6BZ6 | 1.2meg | .100Ω | 0Ω | 2Ω | ↑7000Ω | ↑12K | 100Ω | | |
| V2 | 6AB4 | ↑12K | 0Ω | 1.7Ω | 0Ω | ↑12K | 1meg | 0Ω | | |
| V3 | 6BA6 | 1meg | 0Ω | 0Ω | 2Ω | ↑5700Ω | ↑5700Ω | 0Ω | | |
| V4 | 6BA6 | ∞2.7meg | ∞0Ω | 0Ω | 2Ω | ∞↑5500Ω | ∞↑5500Ω | ∞0Ω | | |
| V5 | 6BE6 | ∞22K | ∞.10 | 0Ω | .2Ω | ∞↑5500Ω | ∞↑5500Ω | ∞2.5Ω | | |
| V6 | 6BA6 | 2.7meg | 0Ω | .2Ω | 0Ω | ↑5700Ω | ↑5700Ω | 68Ω | | |
| V7 | 6BY8 | 100K | 0Ω | ↑88K | 2Ω | 0Ω | ↑20K | ↑20K | ↑20K | 0Ω |
| V8 | 6BJ7 | 44K | 22K | 0Ω | 0Ω | .2Ω | 520K | 0Ω | 22K | 0Ω |
| V9 | 12AX7 | ↑300K | 1meg | 2700Ω | 300Ω | 300Ω | ↑300K | 80K | 2700Ω | 300Ω |
| V10 | 12AX7 | ↑110K | 470K | 500Ω | 300Ω | 300Ω | ↑110K | 470K | 500Ω | 300Ω |
| V11 | 6L6GB | NC | 300Ω | ↑170Ω | ↑1500Ω | 220K | TP | 300Ω | 225Ω | |
| V12 | 6L6GB | NC | 300Ω | ↑170Ω | ↑1500Ω | 220K | NC | 300Ω | 225Ω | |
| V13 | 6EB5 | INF | INF | INF | INF | 0Ω | NC | 10meg | | |
| V14 | 5U4GB | TP | ¶ | NC | 35Ω | NC | 53Ω | NC | ¶ | |

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 2 OF V14. NC NO CONNECTION
∞ MEASURED IN "AM" POSITION. TP THE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

◉ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with Circuit Facts

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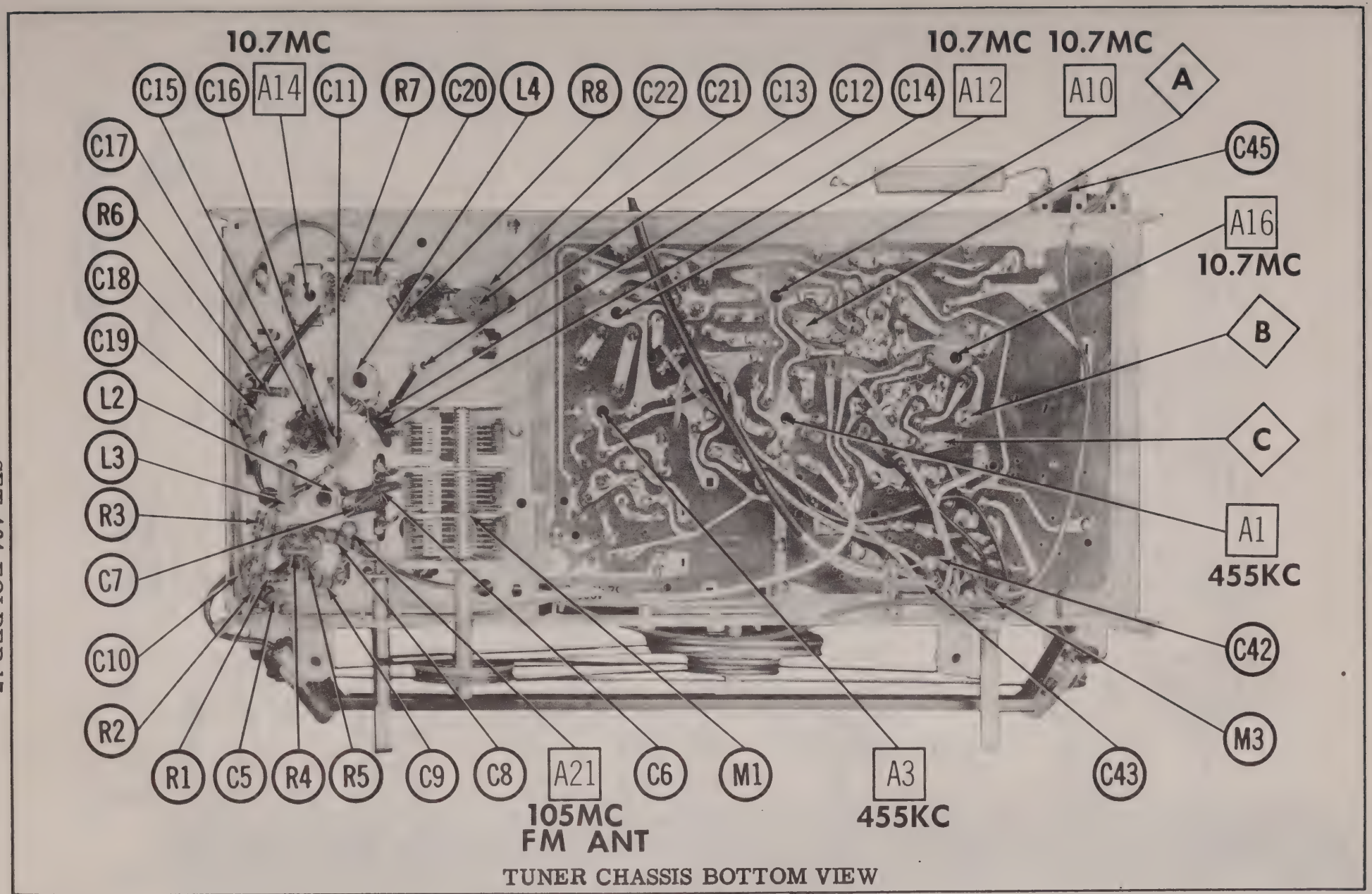
**PHILCO MODELS G-19065, G-19075, RSB-10, RT-202 Series, SA-3000**




TUNER CHASSIS BOTTOM VIEW

PHILCO
MODEL G-1906S

# ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Allow a 20 minute warm-up period for the receiver and test equipment.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
With tuning gang closed, adjust AM pointer to coincide with first small index mark on AM dial and FM pointer to coincide with first small index mark on FM dial.

Suggested Alignment Tools:
A1 thru A4, A9 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5, A6, A7, A18, A21 ..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A8, A10 thru A17, A19, A20 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 1. | .05mfd | High side to pin 7 (grid) of AM Converter. Low side to chassis. | 455KC (400∿ Mod.) | AM | Tuning gang fully open | Across Audio Output Jack | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | | Loop | 1600KC | " | 1600KC | " | A5 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 3. | | " | 1400KC | " | Tune to 1400KC signal | " | A6, A7 | " |
| 4. | | " | 580KC | " | 580KC | " | A8, A9 | Adjust for maximum output while rocking tuning gang. Repeat steps 3 and 4. |

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 5. | 200mmf | High side to pin 1 (grid) of FM RF Amplifier. Low side to chassis. | 10.7MC (Unmod.) | FM | Point of non-interference | DC probe thru 100K to point (A). Common to chassis. | A10, A11, A12, A13, A14, A15 | Adjust for maximum deflection. |
| 6. | " | High side to pin 1 (grid) of FM Limiter. Low side to chassis. | " | " | " | DC probe thru 100K to point (B). Common to chassis. | A16 | " |
| 7. | " | " | " | " | " | DC probe thru 100K to point (C). Common to chassis. | A17 | Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting. |

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 150KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT SCOPE | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 5. | 200mmf | High side to pin 1 (grid) of FM RF Amplifier. Low side to chassis. | 10.7MC (150KC Swp.) | FM | Point of non-interference | Vert. Amp. thru 100K to point (A). Low side to chassis. | A10, A11, A12, A13, A14, A15 | Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. |
| 6. | " | High side to pin 1 (grid) of FM Limiter. Low side to chassis. | " | " | " | Vert. Amp. thru 100K to point (B). Low side to chassis. | A16 | " |
| 7. | " | " | " | " | " | Vert. Amp. thru 100K to point (C). Low side to chassis. | A17 | Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A16 for maximum amplitude and straightness of crossover lines. |

FM RF ALIGNMENT

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | BAND SWITCH POS. | RADIO DIAL SETTING | CONNECT VTVM | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| 8. | 270Ω Carbon Resistor | Across FM antenna terminal with 270Ω in high side. | 108.5MC (Unmod.) | FM | Open tuning gang. Insert a .006" non-metalic shim between FM rotor and stator. Open gang against shim. | DC probe thru 100K to point (B). Common to chassis. | A18 | Adjust for maximum deflection. |
| 9. | " | " | 87.75MC | " | Tuning gang fully closed | " | A19 | " |
| 10. | " | " | 91.0MC | " | 91.0MC | " | A20 | " |
| 11. | " | " | 105MC | " | Tune to 105MC signal | " | A21 | " |

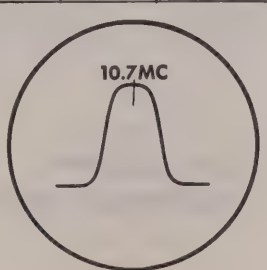


FIG. 1

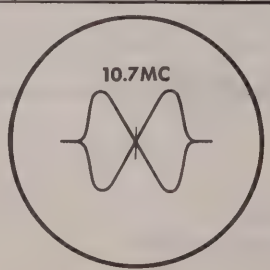
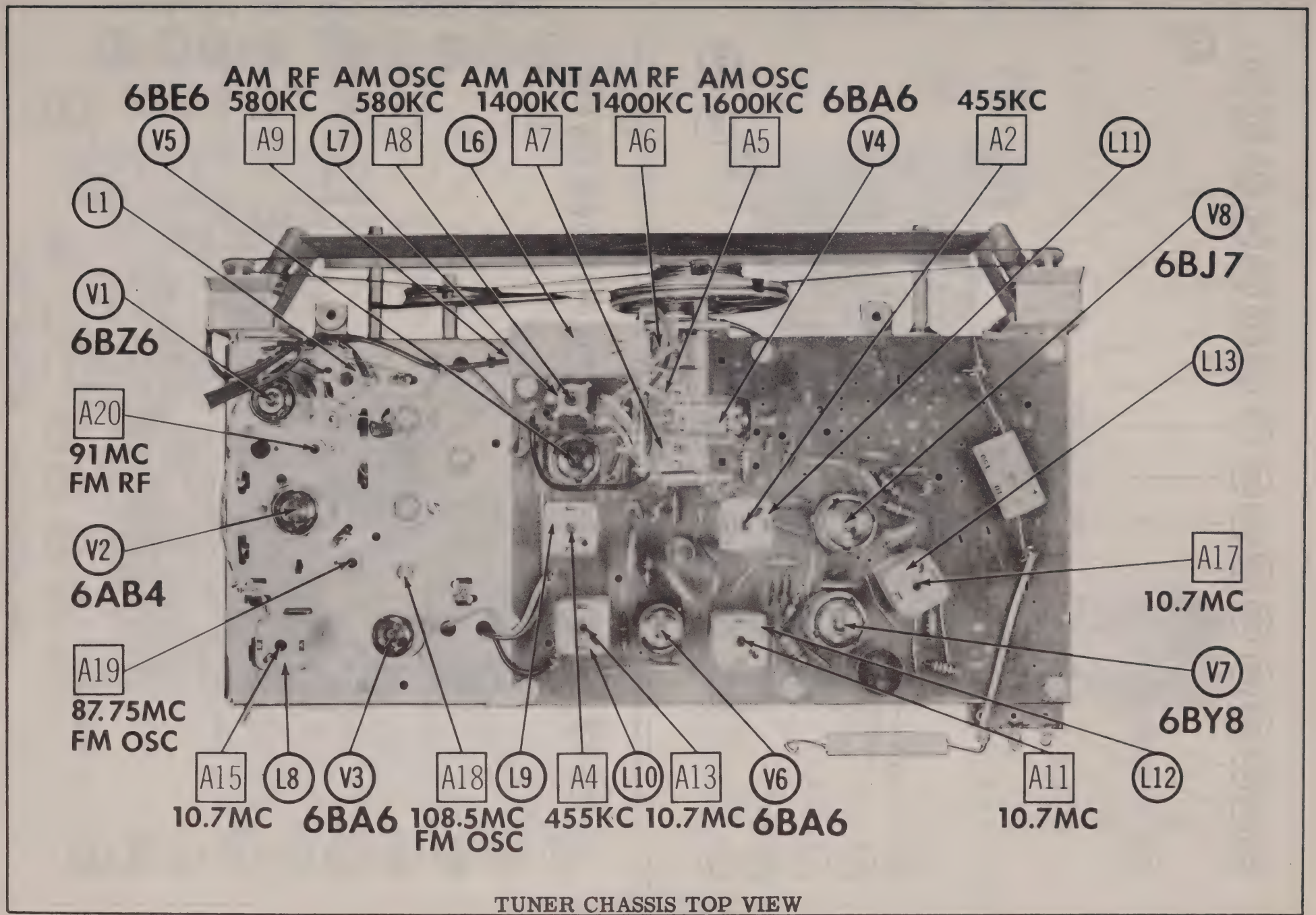
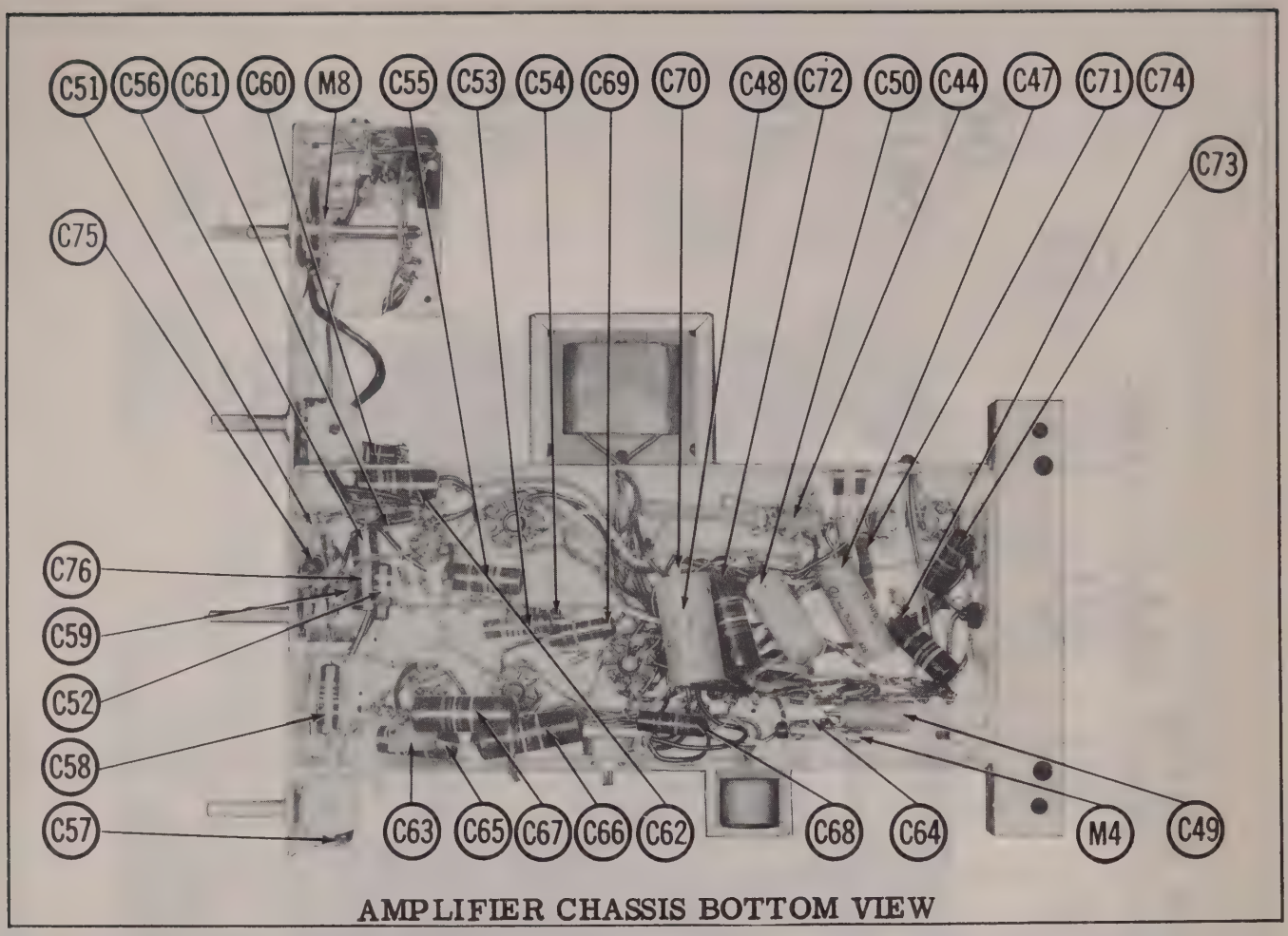


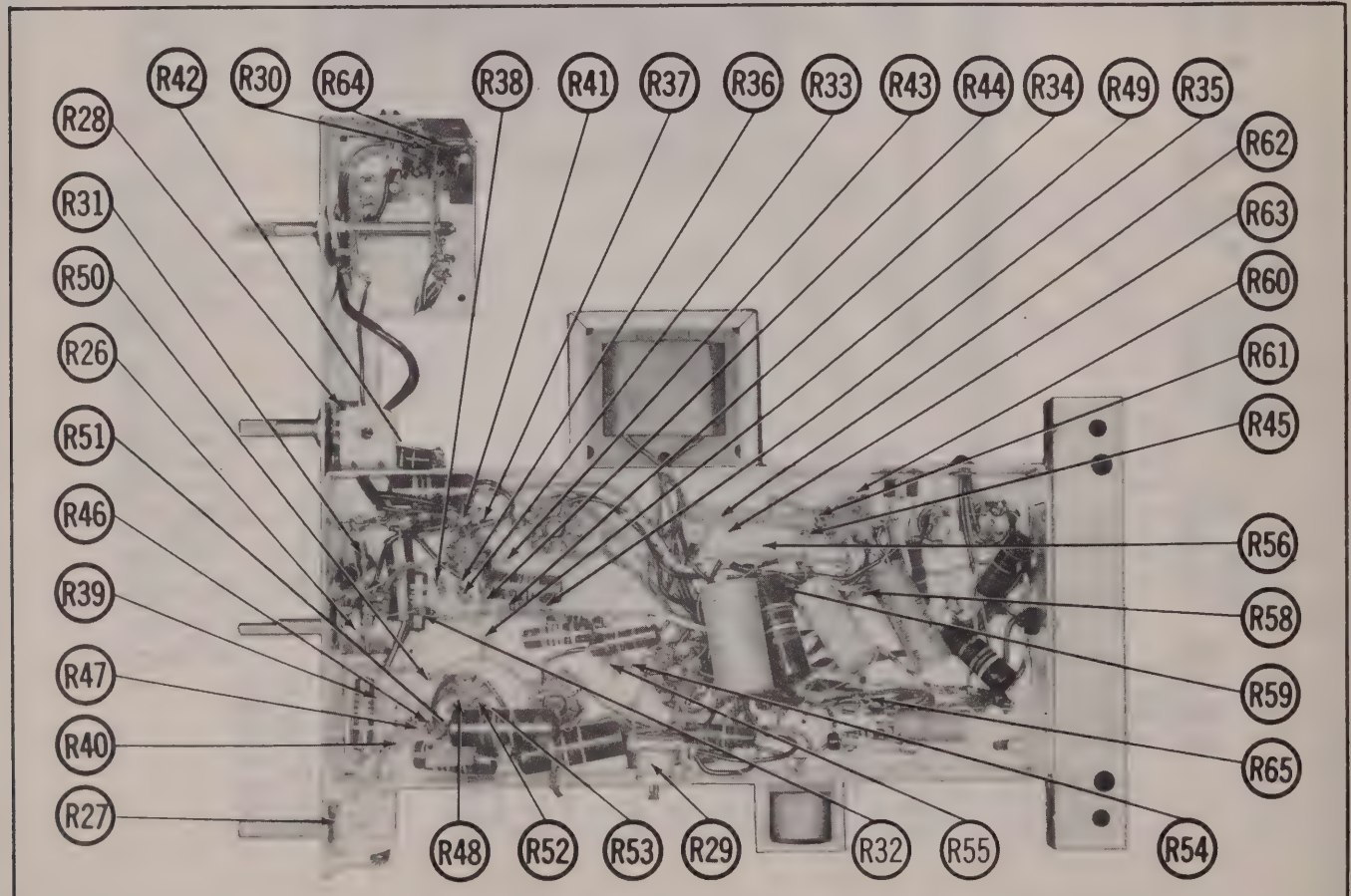
FIG. 2




TUNER CHASSIS TOP VIEW
MODEL G-1906S
PHILCO




AMPLIFIER CHASSIS BOTTOM VIEW




AMPLIFIER CHASSIS BOTTOM VIEW

# AMP PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE (CBS • GENERAL ELECTRIC • RAYTHEON • SYLVANIA) |
|---|---|---|
| V9 | AF Amplifier | 12AX7 (7025) ① |
| V10 | AF Amp. - Phase Inv. | 12AX7 |
| V11 | Output | 6L6GB |
| V12 | Output | 6L6GB |
| V13 | Voltage Doubler | 6EB5 |
| V14 | Rectifier | 5U4GB |

① Used in Models G-1906S-123, G-1907S, SA-3000.

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | PHILCO PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C46A | ▲40 | 450 | 30-2590-39 | AFH4-18-10 | D0171 | FP446 | TMT-37 | TVL-4771. 8 | |
| B | ■30 | 450 | | | | | TD-10-450 | | |
| C | ▲10 | 450 | | | | | | | |
| D | 10 | 450 | | | | | | TVAS-1204.3* | |
| C47 | 12 | 25NP | 30-2593-1 | PRS7315 | BBR25-50 † | TCN5010 | | | |
| C48 | 10 | 450 | 30-2417-34 | PRS1720 | BR1045 | TC72 | TD-10-450 | TVA-1705 | |
| C49 | 100 | 6 | 30-2588-5 | PRS1100 | BBR100-6 | TC2501 | TD-100-6 | TVA-1101 | |
| C50 | 50 | 50 | 30-2596-2 | PRS1350 | BR505 | TC39 | TD-50-50 | TVA-1308 | |

† Use 2 units. Connect negative terminals together.
Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## FIXED CAPACITORS

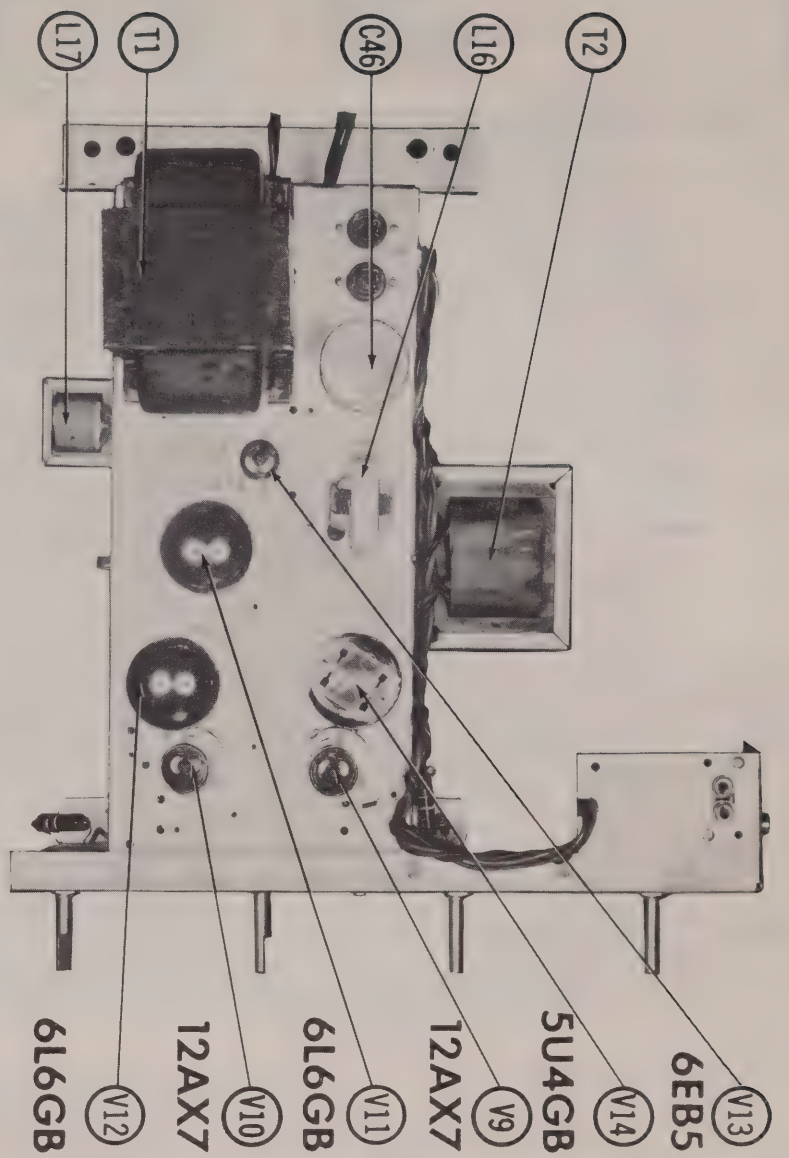
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C51 | 100 10% | | 1469-0001 | DD-101 | 22R5T1 | CM-20B-101K | MCB235 | MS-310 |
| C52 | .01 400V 10% | | V84C4S1 10% | | PM4S1 | 4DP-1-103 | GTM-411 | 4TM-S1 |
| C53 | .022 400V 10% | | V84C4S22 10% | | PM4S22 | 4DP-2-223 | GTM-4122 | 4TM-S22 |
| C54 | .01 400V 10% | | V84C4S1 10% | | PM4S1 | 4DP-1-103 | GTM-411 | 4TM-S1 |
| C55 | .047 600V | | P688N-047 | DD-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C56 | .047 600V | | P688N-047 | DD-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C57 | .0022 400V 10% | | V84C4D22 10% | | PM6D22 | 6DP-1-222 | GTM-4222 | 6TM-D22 |
| C58 | .022 400V 10% | | V84C4S22 10% | | PM4S22 | 4DP-2-223 | GTM-4122 | 4TM-S22 |
| C59 | 120 10% | | 1469-00012 | DD-121 | 22R5T12 | CM-20B-121K | CNO-312 | 10TS-T12 |
| C60 | .001 400V 10% | | V84C4D1 10% | DD-102 | PM6D1 | 6DP-1-102 | GTM-412 | 6TM-D1 |
| C61 | 68 * (270mmf) 10% | | 1469-000068 | DD-680 | 22R5Q68 | CM-20B-680K | CNO-468 | M3-468 |
| C62 | .047 600V | | P688N-047 | DD-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C63 | 470 10% | | 1469-00047 | DD-471 | 22R5T47 | CM-20B-471K | JL-347 | MS-347 |
| C64 | .0033 400V | | P488N-0033 | DD-332 | CUB6D33 | 6DP-1-332 | GTM-4233 | 6TM-D33 |
| C65 | .047 600V | | P688N-047 | DD-503 | CUB6S47 | 6TM-S47 | GEM-6147 | 6TM-S47 |
| C66 | .15 400V | | P488N-15 | | CUB4P15 | 4DP-4-154 | GEM-4015 | 4TM-P15 |
| C67 | .15 400V | | P488N-15 | | CUB4P15 | 4DP-4-154 | GEM-4015 | 4TM-P15 |
| C68 | .01 1000V | | P1088N-01 | DD-103 | CUB10S1 | 16DP-3-103 | GEM-1011 | 10TM-S1 |
| C69 | .01 1000V | | P1088N-01 | DD-103 | CUB10S1 | 16DP-3-103 | GEM-1011 | 10TM-S1 |
| C70 | .01 1000V | | P1088N-01 | DD-103 | CUB10S1 | 16DO-3-103 | GEM-1011 | 10TM-S1 |
| C71 | .01 1000V | | P1088N-01 | DD-103 | CUB10S1 | 16DP-3-103 | GEM-1011 | 10TM-S1 |
| C72 | .015 600V | | P688N-015 | DD-153 | CUB6S15 | 6DP-2-153 | GEM-6115 | 6TM-S15 |
| C73 | .01 600V | | P688N-01 | DD-103 | CUB6S1 | 6DP-2-103 | GEM-611 | 6TM-S1 |
| C74 | .047 600V | ① | P688N-047 | DD-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C75 | .0022 400V 10% | | V84C4D22 10% | | PM6D22 | 6DP-1-222 | GTM-4222 | 6TM-D22 |
| C76 | 47 10% | | 1469-000047 | DD-470 | 22R5Q47 | CM-20B-470K | CNO-447 | MS-447 |

* Alternate Value.

① Not used in some versions.

## AMP CHASSIS—TOP VIEW



# AMP PARTS LIST AND DESCRIPTIONS (Continued)

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | PHILCO PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R26A | 1meg | ½ | 33-5573-32 | B-69 | | Q11-137 | ■ UE3912 | Loudness |
| B | 1meg | ½ | | SR-70 | | M13-137 | | Loudness |
| R27A | 1meg | ½ | 33-5587-14 | B-70 | A47-1meg-Z | Q13-137 | U53 | Bass |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R28A | 1meg | ½ | 33-5587-14 | B-70 | A47-1meg-Z | Q13-137 | U53 | Treble |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R29A | 200Ω | ½ | 33-5572-39 | AB-2 | | B11-201 | RU22L | Hum Adjust |
| B | Shaft | | | AK-1 | | TM1 | SL3500 | |
| C | Bushing | | | Not Req. | | Not Req. | SL38 | |

■ "STA-LOC" Equivalent: FA16L, RU16A, CS3500.

## RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R30 | 2.2meg | (1meg) * |
| R31 | 1.5meg | |
| R32 | 10K | |
| R33 | 1meg | |
| R34 | 820K | |
| R35 | 820K | |
| R36 | 1meg | |
| R37 | 270K | |
| R38 | 2700Ω | |
| R39 | 220K | |
| R40 | 22K | |
| R41 | 100K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R42 | 270K | |
| R43 | 270K | |
| R44 | 2700Ω | |
| R45 | 10K | |
| R46 | 470K | |
| R47 | 100K | |
| R48 | 100Ω | |
| R49 | 470K | |
| R50 | 100K | |
| R51 | 100K | |
| R52 | 100K | |
| R53 | 1000Ω | |
| R54 | 220K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R55 | 220K | |
| R56 | 225Ω 7W | (250Ω 7W) * |
| R57 | 2.2meg | |
| R58 | 2.2meg | |
| R59 | 10meg | |
| R60 | 10K | |
| R61 | 10K | |
| R62 | 35K 7W | |
| R63 | 1500Ω 7W | (4700Ω) * |
| R64 | 2.2meg | (1meg) * |
| R65 | 1000Ω | |

* Alternate

## FILTER CHOKE

| ITEM No. | RATINGS | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000 ~) | PHILCO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| L16 | | .5Ω | .025 Hy. | 32-8851-2 | | | | | | |
| L17 | .0002A | 60ΩCT | 1.5 Hy. CT | 32-8848-2 | | | | | | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | PHILCO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V @ 1.28A | 680VCT @ .160A | 5V @ 3A | 32-8863-1 ① | | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3V @ .6A | 6.3V @ 2.7A | 6.3V @ 2.6A | | | | | | | |

① Used in Model G1907S or Alternate Part #32-8863-2.
Part #32-8861-1 or 32-8861-2 used in Model G1906S. Part #32-8861-3 used in Model SA-3000.

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | PHILCO PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 5700Ω CT | 6-8Ω | 32-8826-2 | | | | | | | |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | PHILCO PART No. | QUAM PART No. | |
| SP1 | 15" | PM | 6-8Ω | 36-1666 | 15A10L | |
| SP2 | 7 3/4" x 14 1/2" | Electrostatic | | 36-1674 | | |
| SP3 | 7 3/4" x 14 1/2" | Electrostatic | | 36-1674 | | |

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | PHILCO PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M4 | 3AG P/T | 4/10A | 45-2656-24 | | 315.400 (3AG 4/10A 250V P/T) | | MDV 4/10 | |
| M5 | 2½" #26 wire | | | | | | | |

## PHONO CARTRIDGE

| ITEM No. | REPLACEMENT DATA | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PHILCO PART No. | ASTATIC PART No. | | ELECTRO-VOICE PART No. | | JENSEN PART No. | | SONOTONE PART No. | |
| | | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE |
| M6 | 325-8036 | 13T | Not Req. | * 66 | Not Req. | | | † 8T-S | Not Req. |

* Use Mount PT-3 † Includes Mount.

## PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

| ITEM No. | REPLACEMENT DATA | | | REMARKS |
|---|---|---|---|---|
| | PHILCO PART No. | CLEVITE WALCO PART No. | JENSEN PART No. | |
| M7 | 325-8232 (LP) | † E98X or ♦ E98XD | † W-101STS * or † W-102S * or ♦ W-101STD * | † Jewel ♦ Diamond * Includes Cartridge |
| | 325-8233 (78RPM) | † E98 or ♦ E98D | | |

## MISCELLANEOUS

| ITEM No. | PART NAME | PHILCO PART No. | NOTES |
|---|---|---|---|
| M8 | Switch | 42-2094-1 | Function |
| | Switch | 42-2103-1 | Function, SA1000 |
| M9 | Switch & Cable | 42-4250-1 | Bin Lights |

## CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Bezel | 28-12234-2 | Tuner (G-1907S Only) |
| Knob | 54-6035-2 | Tuner (G-1907S Only) |
| Knob | 54-6035-13 | Function Switch (G-1907S Only) |
| Knob | 54-6271 | Amplifier |
| Knob | 54-6292-6 | Model RSB-10 |
| Dial Pointer | 28-9739-8 | Chassis RT-202, -2, -3, -4 |
| Dial Pointer | 28-9739-7 | Chassis RT-202-1 |

PHOTOFACT* Folder

EIA MEMBER

# STROMBERG-CARLSON MODELS AF-681K, KS, M, MS, W, WS

STROMBERG-CARLSON MODELS
AF-681K, KS, M, MS, W, WS

MODEL AF-681K

STROMBERG-CARLSON MODELS
AF-681K, KS, M, MS, W, WS

| | |
|---|---|
| TRADE NAME | Stromberg-Carlson Models AF-681K, AF-681KS, AF-681M, AF-681MS, AF-681W, AF-681WS |
| MANUFACTURER | Stromberg-Carlson Co., Special Products Div., 1400 N. Goodman St., Rochester 9, N. Y. |
| TYPE SET | AC Operated 6 Tube Phono Amplifier With 4 Speed Automatic Record Changer |
| POWER SUPPLY | 110-120 Volts AC, 60 Cycles RATING 89 Watts, .87 Amp. @ 117 Volts AC (Less Motor) |

FOR SERVICE INFORMATION ON RECORD CHANGER PART # 148000-023 OR 148000-022 (STEREO ADAPTED) — SEE SIMILAR GLASER — STEERS GS77 — PHOTOFACT SET 399 FOLDER 7

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JS296

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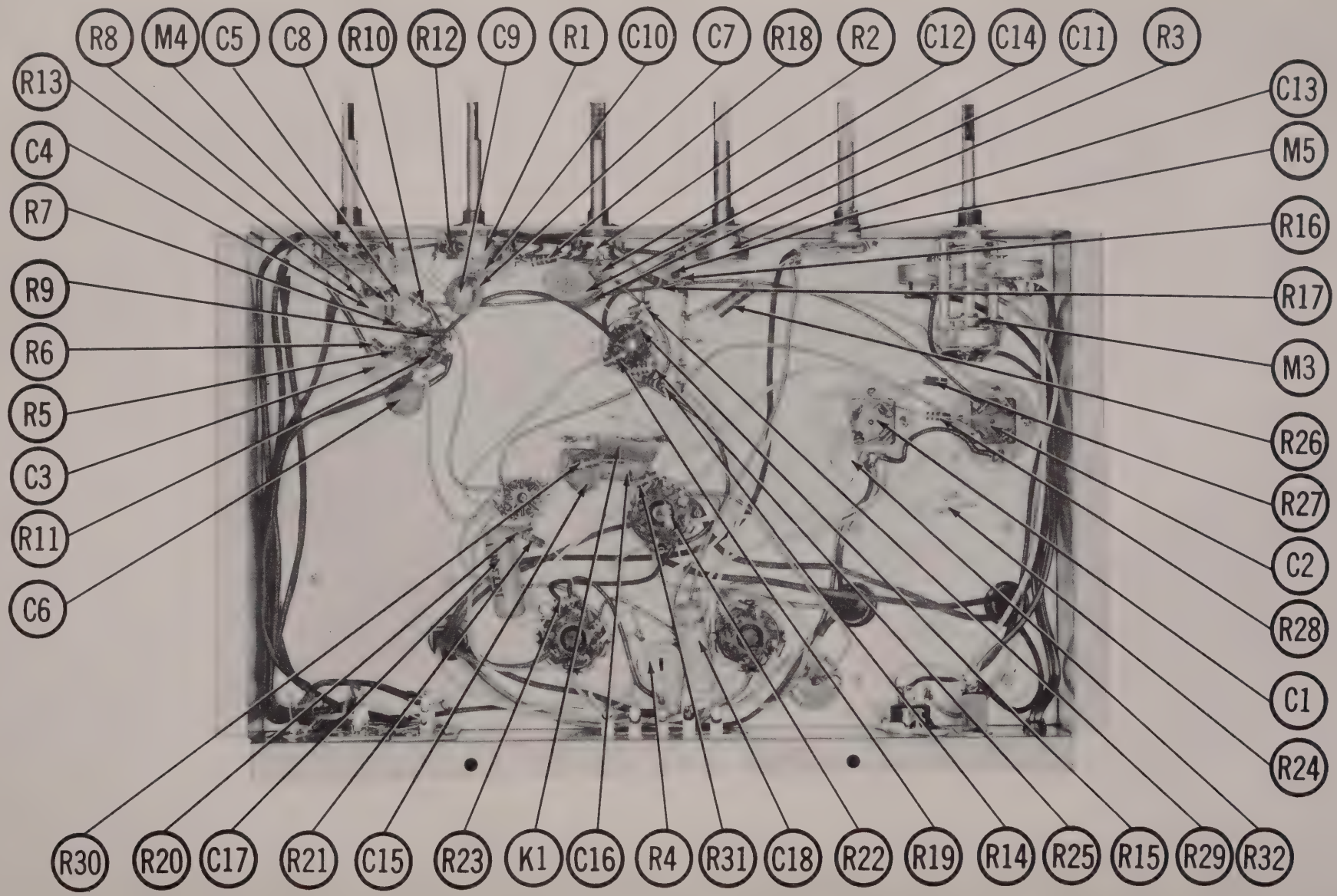



CHASSIS BOTTOM VIEW

# PARTS LIST AND DESCRIPTIONS

## TUBES

| ITEM No. | USE | TYPE | ITEM No. | USE | TYPE |
|---|---|---|---|---|---|
| V1 | Mag. Phono Preamp. | ECC83/12AX7 ① | V4 | Output | 6L6GB |
| V2 | AF Amplifier | ECC83/12AX7 | V5 | Output | 6L6GB |
| V3 | Phase Inv. | 6AV6 | V6 | Rectifier | 5U4GB |

① Alternate 7025

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING CAP. | RATING VOLT. | REPLACEMENT DATA Stromberg-Carlson PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| C1A | ■30 | 450 | 111000-026 | AFH2-54 | B0430 | FP237 | TMD-52 | TVL-2759 | |
| B | ▲30 | 450 | | | | | | | |
| C2A | ▲15 | 300 | | AFH4-85-25 | D0655 | FP431.3 | | TVL-4705.8 | |
| B | ■30 | 350 | | | | | | | |
| C | ▲40 | 450 | | | | | | | |
| D | 50 | 50 | | | | | | | |

## FIXED CAPACITORS

**Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.**

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
|---|---|---|---|---|---|---|---|---|
| C3 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C4 | 470 | | BPD-00047 | DD-471 | BYA10T47 | CCD-471 | B-347 | 5GA-T47 |
| C5 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C6 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C7 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C8 | 1000 | | BPD-001 | DD-102 | BYA10D1 | CCD-102 | B-210 | 5HK-D10 |
| C9 | 100 | | BPD-0001 | DD-101 | L10T1 | CCD-101 | UC-531 | 5GA-T10 |
| C10 | 4700 | | BPD-0047 | DD-472 | BYA10D47M | CCD-472 | B-247 | 5HK-D47 |
| C11 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C12 | 470 10% | | DI-470 | MD-471 | 5R5T47 | CCD-471 | JL-347 | 10TS-T47 |
| C13 | 470 10% | | DI-470 | MD-471 | 5R5T47 | CCD-471 | JL-347 | 10TS-T47 |
| C14 | 4700 10% | | DI-4700 | | 1R5D47 | CCD-472 | JL-247 | 10TS-D47 |
| C15 | 10000 | | BPD-01 | DD-103 | BYA10S1 | CCD-103 | B-110 | 5HK-S10 |
| C16 | .047 600V | | P688N-047 | DF-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C17 | .047 600V | | P688N-047 | DF-503 | CUB6S47 | 6DP-3-473 | GEM-6147 | 6TM-S47 |
| C18 | .1 200V | | P288N-1 | DF-104 | CUB2P1 | 2DP-3-104 | GEM-201 | 2TM-P1 |
| C19 | 3 30V | | P1589Z-3.0 | | | | | 118P30502S2 |

## CONTROLS

| ITEM No. | RATING RESISTANCE | RATING WATTS | REPLACEMENT DATA Stromberg-Carlson PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| R1A | 1meg | ½ | 145671-000 | B7-72 | A47F-1meg | Q13-137X | UT-440 | Loudness, Tap @ 250K |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R2A | 5meg | ½ | 145211-000 | B-88 | A47-5meg-Z | Q13-141 | U65 | Bass |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R3A | 1meg | ½ | 145212-000 | B-69 | A47-1meg-S | Q11-137 | U54 | Treble |
| B | Shaft | | | Not Req. | FS-3 | Not Req. | Not Req. | |
| R4 | 100Ω | 1(WW) | 173853-000 | | | | FL100P | Hum Balance |

## RESISTORS

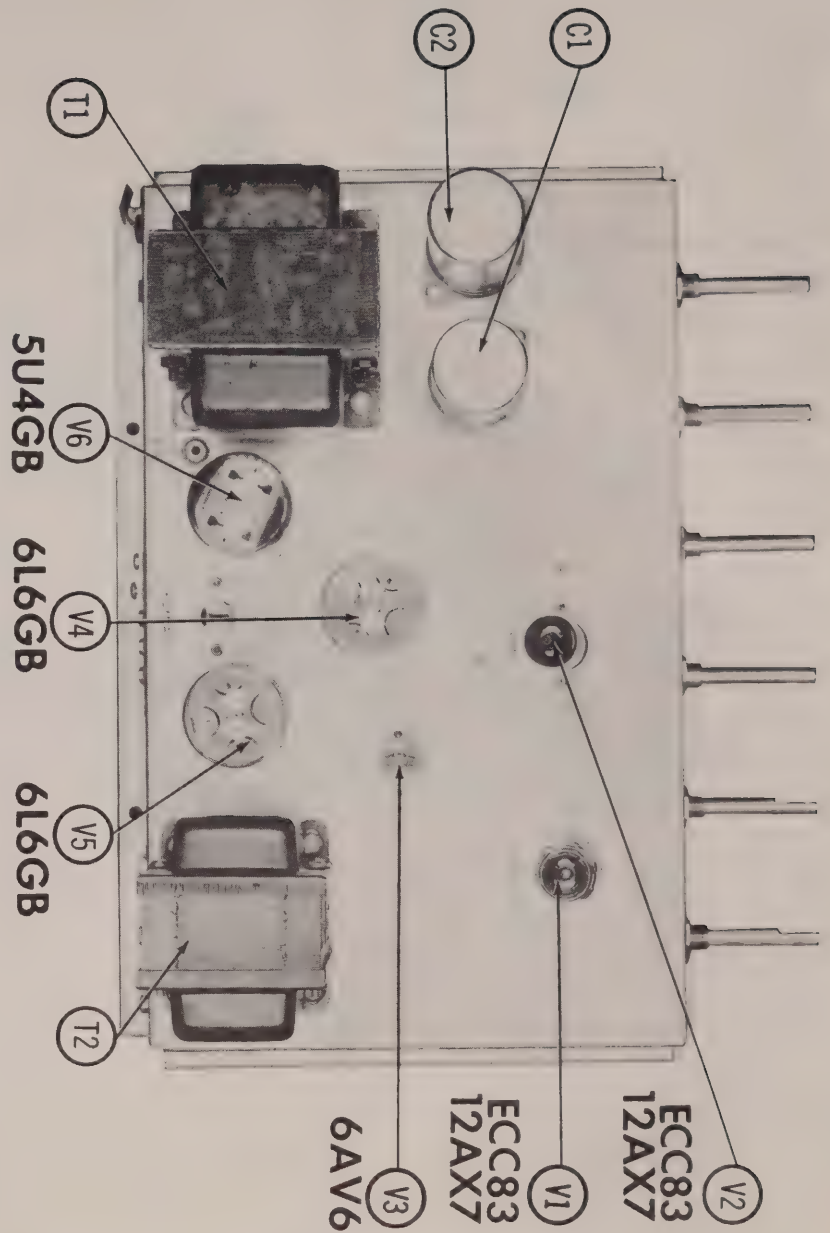
**All wattages 1/2 watt, or less, unless otherwise listed.**

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R5 | 47K | |
| R6 | 100K | |
| R7 | 5600Ω | |
| R8 | 150K | |
| R9 | 1meg | |
| R10 | 100K | |
| R11 | 5600Ω | |
| R12 | 47K | |
| R13 | 100K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R14 | 220K | |
| R15 | 1800Ω | |
| R16 | 470K | |
| R17 | 100K | |
| R18 | 47K | |
| R19 | 2700Ω | |
| R20 | 3.3meg | |
| R21 | 120K 5% | |
| R22 | 330K | |

| ITEM No. | RATING | REMARKS |
|---|---|---|
| R23 | 330K | |
| R24 | 250Ω 5W | |
| R25 | 47K | |
| R26 | 100Ω 1W | |
| R27 | 100K | |
| R28 | 47K | |
| R29 | 220K | |
| R30 | 120K 5% | |
| R31 | 15K | |
| R32 | 5000Ω 5W | |

## CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | Stromberg-Carlson PART No. | REPLACEMENT DATA |
|---|---|---|---|---|
| K1 | Audio Coupling | 1000mmf 10%, 1000mmf 10%, 4700mmf 10%, 3.3meg, 3.3meg, 3.3meg | 179000-033 | |

## TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. 1 | SEC. 2 | Stromberg-Carlson PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
| T1 | 117V ⓐ .87 A | 640 VCT ⓐ .100A | 5V ⓐ 3A | 161462-000 | | | | | | |
| | SEC. 3 | SEC. 4 | SEC. 5 | | | | | | | |
| | 6.3V ⓐ 2.9A | | | | | | | | | |

## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | PRI. | SEC. | Stromberg-Carlson PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 5000Ω CT | 16Ω Taps ⓐ 8Ω, 4Ω | 161000-036 | 22S70① | A-3131 | | A-3800 | 22S70① | S-35A① | ① Drill New Mounting Holes |

## SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|---|---|---|---|---|---|---|
| | SIZE | FIELD | V. C. IMP. | Stromberg-Carlson PART No. | QUAM PART No. | |
| SP1 | 12" | PM | 6-8Ω | 155000-010 | 12A6AZ6 | ① Series And Phase. |
| SP2 | 6"x 9" | PM | 3-4Ω | 155000-009① | 69A2 ① | ② Parallel And Phase |
| SP3 | 6"x 9" | PM | 3-4Ω | 155000-009 ① | 69A2① | ③ May be used in some models |
| SP4 | 3½" | PM | 10-12Ω | 155372② | 3A15TZ10.6② | |
| SP5 | 3½" | PM | 10-12Ω | 155372② | 3A15TZ10.6② | |
| | 12" | PM | | 155324-000③ | | |

## PHONO CARTRIDGE

| ITEM No. | REPLACEMENT DATA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Stromberg-Carlson PART No. | ASTATIC PART No. | | ELECTRO-VOICE PART No. | | JENSEN PART No. | | SONOTONE PART No. | |
| | | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE | CARTRIDGE | NEEDLE |
| M1 | 171000-237 ① 148000-047 ② | 13-TBX * | Not Req. | 66 † | Not Req. | | | 8T-S * | Not Req. |

① Models AF-681K, M, W.
② Used in Models AF-681KS, MS, WS.

* Includes Mounting.
† Use PT-3 Mount.

## PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

| ITEM No. | REPLACEMENT DATA | | | REMARKS |
|---|---|---|---|---|
| | Stromberg-Carlson PART No. | JENSEN PART No. | WALCO PART No. | |
| M2 | 148000-025 ② (1 Mil. Diamond) | | | † Jewel<br>♦ Diamond<br>① Used in Models AF-618K, M, & W<br>② Used in Models AF-681KS, MS, WS |
| | 148000-024 ① (1 Mil. Sapphire) | | | |
| | 148000-026 (3 Mil. Sapphire) | | | |
| | 148000-049 ② | CRA57X † CRA57XD ♦ | | |

## MISCELLANEOUS

| ITEM No. | PART NAME | Stromberg-Carlson PART No. | NOTES |
|---|---|---|---|
| M3 | Switch | 158000-025 | Power (Off-On, Auto, Stereo) |
| M4 | Switch | 158070-000 | Function Selector (Mag. Phono-Col-78-Tuner-Tape-Aux.) |
| M5 | Switch | 158071-000 | Speaker |
| M6 | Switch | 171000-197 | Record Changer, Off-On |
| M7 | Motor | 171000-187 | Turntable Drive |

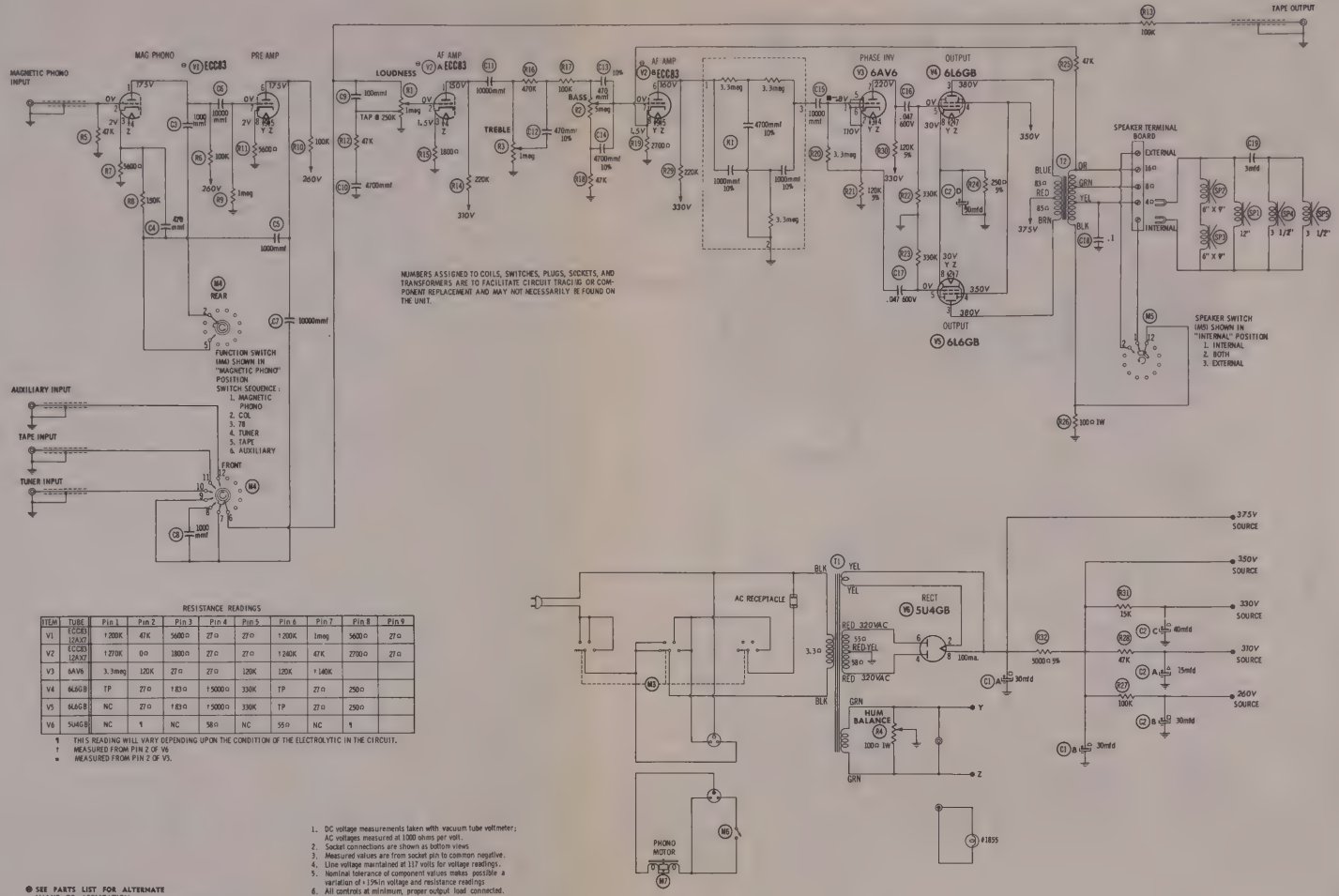
## CABINETS & CABINET PARTS

**(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)**

| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | 134000-019 | |
| Knob | 171000-190 | Speed Selector, On Changer |
| Cabinet | 108000-033 | Model AF-681M |
| Cabinet | 108000-034 | Model AF-681W |
| Cabinet | 108000-035 | Model AF-681K |
| Leg | 166000-046 | Model AF-681M |
| Leg | 166000-047 | Model AF-681W |
| Leg | 166000-048 | Model AF-681K |

## WIRING DATA

| | |
|---|---|
| General-use Unshielded Hook-up Wire | Use BELDEN No. 8530 (Solid) Available in Ten Colors<br>8524 (Stranded) Available in Ten Colors |
| Power Cord | Use BELDEN No. 1765-B (6 Ft. Length)<br>1725-K (7½ Ft. Length) |
| Low-Loss Shielded Lead (Interconnecting) | Use BELDEN No. 8401 |
| Phono Pick-up Arm Cable | Use BELDEN No. 8430 (Two Conductor - Twisted) |




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 | Pin 8 | Pin 9 |
|---|---|---|---|---|---|---|---|---|---|---|
| V1 | ECC83 (12AX7) | †200K | 47K | 5600Ω | 27Ω | 27Ω | †200K | 1meg | 5600Ω | 27Ω |
| V2 | ECC83 (12AX7) | †270K | 0Ω | 1800Ω | 27Ω | 27Ω | †240K | 47K | 2700Ω | 27Ω |
| V3 | 6AV6 | 3.3meg | 120K | 27Ω | 27Ω | 120K | 120K | †140K | | |
| V4 | 6L6GB | TP | 27Ω | †83Ω | †5000Ω | 330K | TP | 27Ω | 250Ω | |
| V5 | 6L6GB | NC | 27Ω | †83Ω | †5000Ω | 330K | TP | 27Ω | 250Ω | |
| V6 | 5U4GB | NC | ¶ | NC | 58Ω | NC | 55Ω | NC | ¶ | |

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 2 OF V6
▪ MEASURED FROM PIN 2 OF V3.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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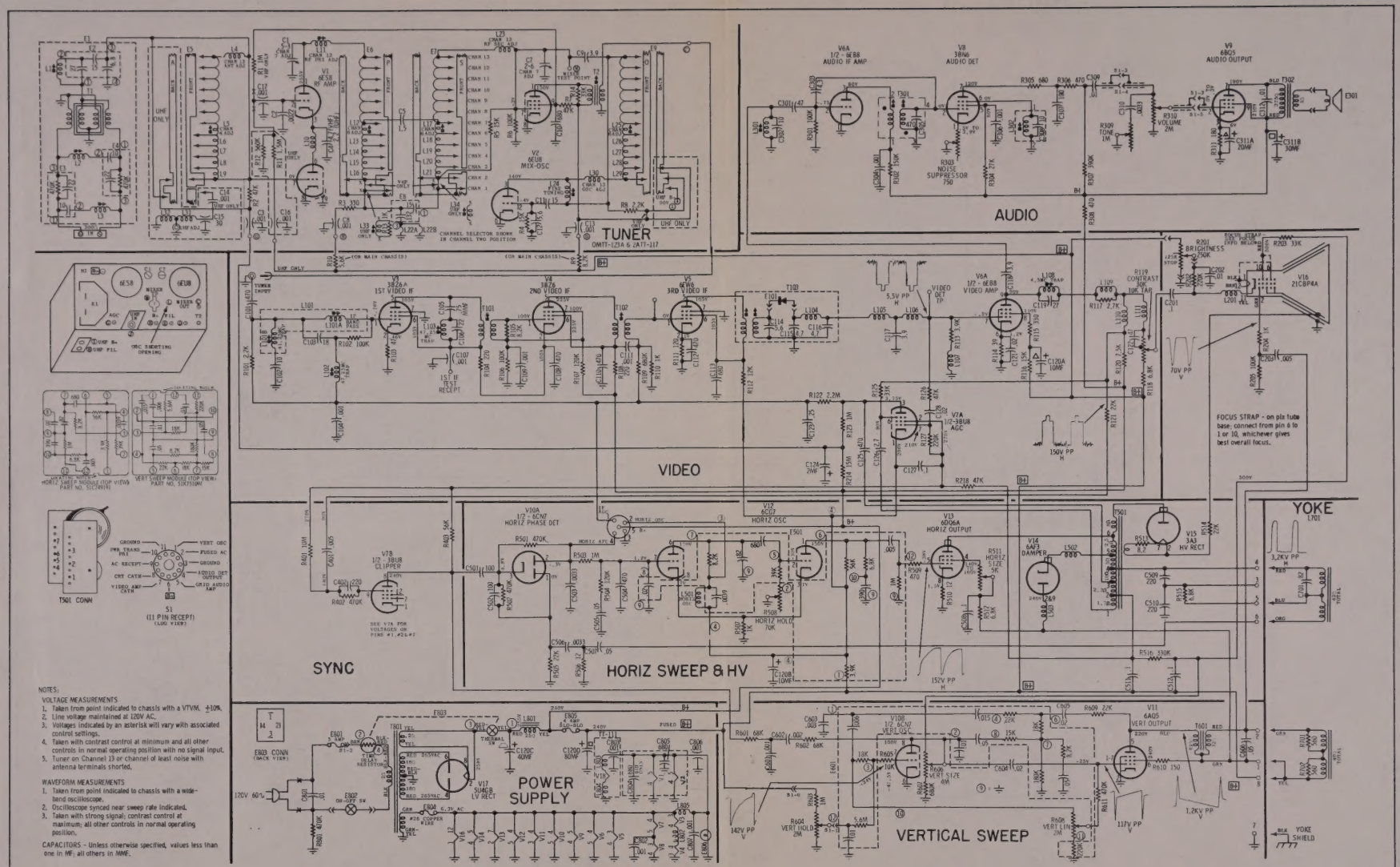
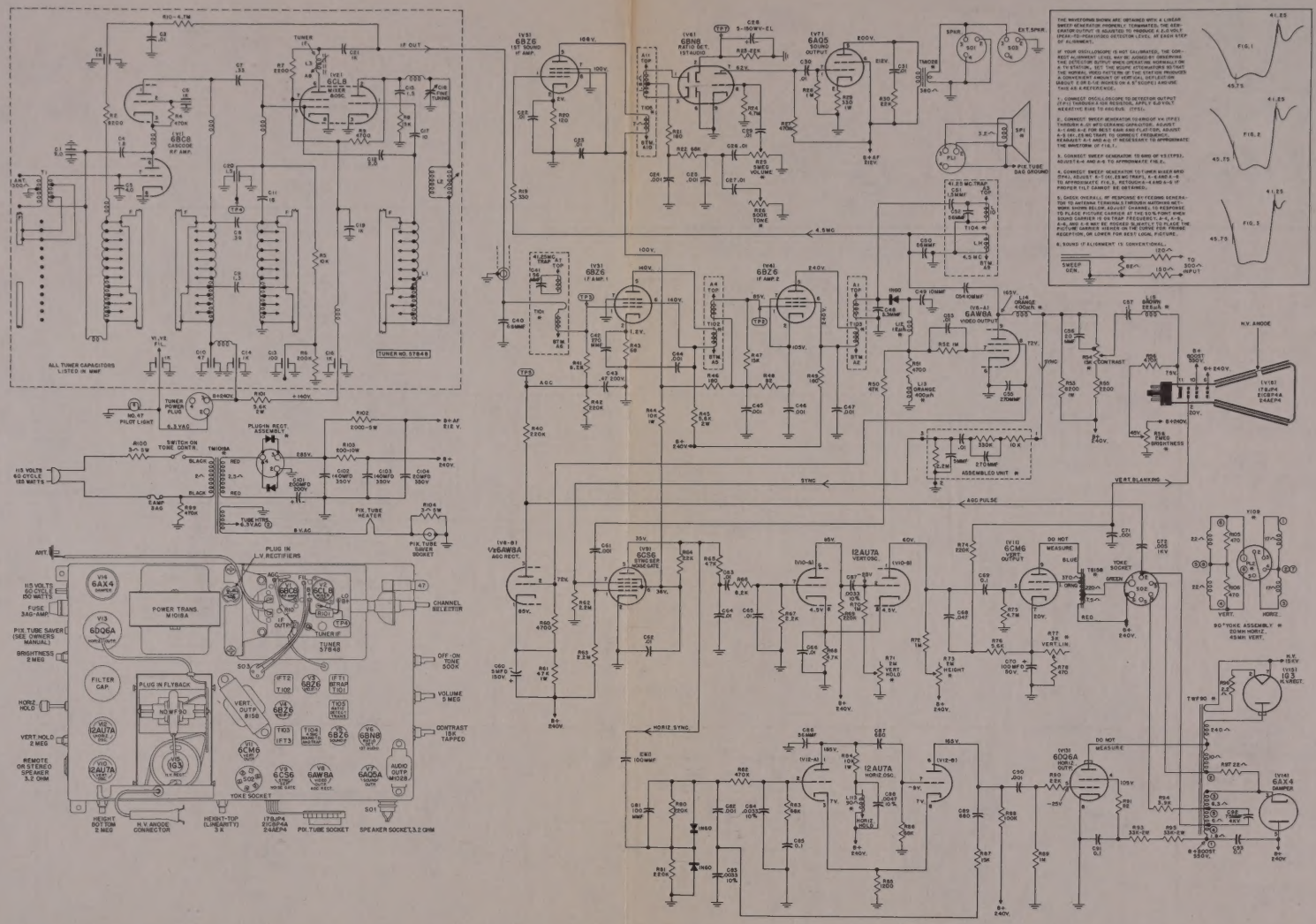
**STROMBERG-CARLSON MODELS**
**AF-681K, KS, M, MS, W, WS**


TUNER
OMTT-1Z5A & ZATT-117
AUDIO
VIDEO
SYNC
HORIZ SWEEP & HV
POWER SUPPLY
VERTICAL SWEEP
YOKE
FOCUS STRAP - on pix tube base; connect from pin 6 to 1 or 10, whichever gives best overall focus.
T501 CONN
S1
(11 PIN RECEPT)
(LMO VIEW)
NOTES:
VOLTAGE MEASUREMENTS
1. Taken from point indicated to chassis with a VTVM, ±10%.
2. Line voltage maintained at 120V AC.
3. Voltages indicated by an asterisk will vary with associated control settings.
4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
WAVEFORM MEASUREMENTS
1. Taken from point indicated to chassis with a wide-band oscilloscope.
2. Oscilloscope synced near sweep rate indicated.
3. Taken with strong signal; contrast control at maximum; all other controls in normal operating position.
CAPACITORS - Unless otherwise specified, values less than one in MF; all others in MMF.

MOTOROLA MODELS A21K137B, M, A21T69BG, MG, Y21K124B, M, W, Y21T66BZ, CH, 21K124B, M, W, 21T66BZ, CH(CH. TS-561, Y, WTS-561)

Schematic Diagram Courtesy of Motorola Inc.



SETCHELL-CARLSON MODELS T60, C (CH. 259)
Schematic Diagram Courtesy of Setchell- Carlson Inc.

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